
IBM System x3950

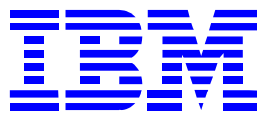
Using

DB2 9 Enterprise Edition

and

SUSE Linux Enterprise Server 10 for Intel EM64T

TPC BenchmarkTM C
Full Disclosure Report



First Edition March 26, 2007

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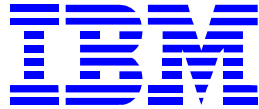
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**IBM System x3950
DB2® 9**

TPC-C Rev. 5.8

**Report Date:
March 26, 2007**

Total System Cost	TPC-C Throughput	Price/Performance	Availability Date	
\$2,784,599 USD	511,342	\$5.45 USD	March 26, 2007	
Database Processors/Cores/Threads	Database Manager	Operating System	Other Software	No. Users
8/16/32 3.5 GHz Intel Xeon 7150N	DB2 9	SLES 10	Microsoft Visual C++ Microsoft COM+	416000

Priced



16 Clients

IBM® System x3500
2x Intel 5160 DC
3.0GHz
2GB Memory
36GB Internal Drive
2 Gigabit Ethernet

IBM® System x3950

8 x Intel Xeon 7150N (3.5GHz)
128GB Memory
1x DS4000 Single Port 4GB FC
1x36GB Internal SAS Drives
10 x DS4000 Dual Port 4GB FC
2 x Integrated GB Ethernet

Storage

10 x IBM® DS4800 Storage Servers
120x IBM® EXP810 DiskEnclosures
1680 x 36.4GB 15K RPM Drives
1 x DS3400 DC Storage Controller
10 x 73.4GB 15K RPM SAS Drives

System Components	Each of the 16 Clients		Server	
	Quantity	Description	Quantity	Description
Processors/Cores/Threads	2/4/4	3.0GHz 2MB L2 Xeon 5160 Dual Core	8/16/32	3.5 GHz Intel Xeon 7150N
Memory	4	512 MB	32	4 GB
Disk Controllers	1	SAS	2 10 1 10 1	Integrated SAS 4Gb dual-port FC Adapters 4Gb single-port FC Adapters IBM DS4800 Controllers for Data IBM DS3400 Controller for Log
Disk Drives	1	36 GB	1680 1 10	36.4GB 15K RPM FC 36GB 10K RPM SAS 73.4GB 15K RPM SAS
Total Storage		576 GB		61,152 GB
Terminals	1	System Console	1	System Console

IBM Corporation	IBM System x3950 c/s			TPC-C Revision 5.8			
	DB2 9			Report Date: March 26, 2007			
Description	Part Number	Third Party Brand	Pricing	Unit Price	Quantity	Extended Price	3-Yr. Maint. Price
Server Hardware							
IBM System x3950 (2 x Intel Xeon Processor 7150N 3.5GHz 667MHz, 2 x 1 MB L2 Cache and 16MB L3 Cache)	8878-5RU	IBM	1	21,269	1	21,269	
Intel Xeon Processor 7150N 3.5GHz/2x1MB L2, 16MB L3	43V4553	IBM	1	5,699	6	34,194	
x3950 E (0 Processors, 0 Memory, 2 Memory Cards)	8879-1RU	IBM	1	6,999	1	6,999	
Scalability Cable 2.3.M	13M7414	IBM	1	299	2	598	
8GB (2x4GB) PC2-3200 CL3 2RX4 ECC DDR2 SDRAM RDIMM	30R5145	IBM	1	5,569	16	89,104	
Active Memory 4-Slot Memory Expansion Card	41Y5000	IBM	1	499	2	998	
IBM 36.4GB 10K 2.5 inch SAS Drive	40K1051	IBM	1	279	1	279	
IBM T115 15-inch TFT Display	494215U	IBM	1	209	1	209	
IBM Preferred Pro USB Keyboard	40K9584	IBM	1	29	1	29	
IBM 3-Button Optical Mouse - Black - USB	40K9201	IBM	1	19	1	19	
ServicePac for 3-Year 24x7x4 Support (x3950)	96P2688	IBM	1	3,390	1		3,390
ServicePac for 3-Year 24x7x4 Support (x3950 E)	10N3059	IBM	1	1,695	1		1,695
ServicePac for 3-Year 24x7x4 Support (Display)	30L9183	IBM	1	90	1		90
					Subtotal	153,698	5,175
Server Storage							
IBM DS4000 FC 4Gbps - PCI-X Dual Port HBA	39M5895	IBM	1	2,485	10	24,850	
IBM TotalStorage DS4800 Midrange Disk Subsystem	1815-82H	IBM	1	65,245	10	652,450	
IBM Short Wave SFP Module (4 Pack)	22R0483	IBM	1	550	55	30,250	
IBM 1m LC-LC Fibre Channel Cable	39M5696	IBM	1	79	240	18,960	
IBM 5m LC-LC Fibre Channel Cable	39M5697	IBM	1	129	20	2,580	
IBM TotalStorage DS4000 EXP810 Storage Exp. Unit	1812-81H	IBM	1	6,000	120	720,000	
36.4GB 15K 2Gbps FC Drive	06P5772	IBM	1	1,115	1680	1,873,200	
IBM System Storage DS3400 Dual Controller	1726-42X	IBM	1	9,295	1	9,295	
IBM Short Wave SFP Module	19K1271	IBM	1	499	1	499	
73.4GB 15K SAS Hot-Swap HDD	40K1043	IBM	1	349	10	3,490	
IBM DS4000 FC 4Gbps - PCI-X Single-Port HBA	39M5894	IBM	1	1,485	1	1,485	
1M Fibre Optic Cable	39M5696	IBM	1	79	1	79	
IBM S2 42U Standard Rack	93074RX	IBM	1	1,489	10	14,890	
ServicePac for 3-Year 24x7x4 Support (EXP810)	41L2768	IBM	1	760	120		91,200
ServicePac for 3-Year 24x7x4 Support (DS4800)	96P2062	IBM	1	1,087	10		10,870
ServicePac for 3-Year 24x7x4 Support (DS3400)	41L2768	IBM	1	760	1		760
ServicePac for 3-Year 24x7x4 Support (Rack)	41L2760	IBM	1	300	10		3,000
					Subtotal	3,352,028	105,830
Server Software							
DB2 ESE 9		IBM	2	270.59	800	216,472	
Extended Systems - SW License and Maintenance 12 Months							
SW Maintenance Renewal - 1 Year		IBM	2	12.89	1600		20,624
SUSE Linux Enterprise Server 10 for x86, AMD64, and							
Intel EM64T with Priority Support for 3 Years	4584142100	SUSE	3	3,748	1	3,748	
					Subtotal	220,220	20,624
Client Hardware							
Linksys ProConnect KVM Switch - 2 ports (2 spares)	430446		6	40	3	120	
IBM System x3500 (Dual-Core Intel Xeon 5160 3.00GHz, 2x512MB RAM	7977-92U	IBM	1	3,399	16	54,384	
3.00GHz/1333MHz/2x2MB L2 Xeon Processor 5160 Upgrade	40K1236	IBM	1	1,575	16	25,200	
1GB (2x512MB) PC2-5300 CL5 ECC DDR2 FBD 667MHz	39M5782	IBM	1	459	16	7,344	
36.4GB 15K SAS Hot-Swap Drive	40K1042	IBM	1	249	16	3,984	
ServicePac for 3-Year 24x7x4 Support (x3550)	96P2250	IBM	1	586	16		9,376
					Subtotal	91,032	9,376
Client Software							
Microsoft Windows Server 2003 Web Edition with COM+	484143	Microsoft	6	296	16	4,736	
Microsoft Visual C++ Professional 6.0	254-00170	Microsoft	4	109	1	109	
Microsoft Problem Resolution Services		Microsoft	4	245	1		245
					Subtotal	4,845	245
Network Components							
D-LINK DGS-1024D 24-Port 10/100/1000 Switch (2 spares)	DGS1024D		5	230	3	690	
Ethernet Cable (2 spares)	CC5E-B14B		7	3	20	60	
					Subtotal	750	
					Total	3,822,573	141,250
Large Purchase Discount (See Note 1.)	31.72%		1			1,179,224	
Pricing: 1 - IBM - 1-888-SHOP-IBM, ext. 5821; 2 - IBM; 3 - Novell; 4 - Microsoft; 5 - compuplus.com; 6 - CDW.com; 7 - newegg.com					Three-Year Cost of Ownership USD:		\$2,784,599
Note 1: Discount based on IBM Direct guidance applies to all line items where Pricing=1. Pricing is for this system or one of similar size.					tpmC:		511,342
Note 2: Pricing for DB2 9 is based on Value Units (VUs) as shown in the price quote in Appendix D.					\$ USD/tpmC:		\$5.45
Note 3: Fifteen x335s were substituted for the priced clients.							
Audited by Francois Raab, InfoSizing, Inc. (www.sizing.com)							
Prices used in TPC benchmarks reflect the actual prices a customer would pay for a one-time purchase of the stated components. Individually negotiated discounts are not permitted. Special prices based on assumptions about past or future purchases are not permitted. All discounts reflect standard pricing policies for the listed components. For complete details, see the pricing sections of the TPC benchmark specifications. If you find that stated prices are not available according to these terms, please inform the TPC at pricing @ tpc.org.							

Numerical Quantities Summary for the IBM System x3950

MQTH, computed Maximum Qualified Throughput: 511,342 tpmC

<u>Response Times (in seconds)</u>	<u>90th %</u>	<u>Average</u>	<u>Maximum</u>
New Order	1.34	0.70	11.29
Payment	1.36	0.68	11.15
Order-Status	1.14	0.65	10.97
Delivery (interactive)	0.48	0.21	9.89
Delivery (deferred)	0.38	0.22	1.19
Stock-Level	1.76	1.16	12.00
Menu	0.63	0.23	9.89

Response time delay added for emulated components was 0.1 seconds

<u>Transaction Mix, in percent of total transactions</u>	<u>Percent</u>
New Order	44.96%
Payment	43.02%
Order-Status	4.01%
Delivery	4.01%
Stock-Level	4.01%

<u>Keying/Think Times (in seconds)</u>	<u>Min.</u>	<u>Average</u>	<u>Max.</u>
New Order	18.00/0.00	18.00/12.04	18.02/120.31
Payment	3.00/0.00	3.00/12.04	3.02/120.33
Order-Status	2.00/0.00	2.00/10.04	2.02/100.31
Delivery	2.00/0.00	2.00/5.04	2.02/50.31
Stock-Level	2.00/0.00	2.00/5.04	2.02/50.31

Test Duration

Ramp-up Time	1 hour 26 minutes
Measurement interval	2 hours 00 minutes
Transactions during measurement interval (all types)	136,488,049

Checkpoints

Number of checkpoints	N/A
Checkpoint interval	N/A

Table of Content

Preface.....	9
0 General Items	10
0.1. Application Code Disclosure	10
0.2. Benchmark Sponsor	10
0.3. Parameter Settings.....	10
0.4. Configuration Diagrams.....	10
1 Clause 1: Logical Data Base Design Related Items	13
1.1. Table Definitions.....	13
1.2. Database Organization	13
1.3. Insert and/or Delete Operations.....	13
1.4. Horizontal or Vertical Partitioning.....	13
2 Clause 2: Transaction & Terminal Profiles Related Items	14
2.1. Verification for the Random Number Generator.....	14
2.2. Input/Output Screens.....	14
2.3. Priced Terminal Features	14
2.4. Presentation Managers	14
2.5. Home and Remote Order-lines.....	14
2.6. New-Order Rollback Transactions.....	14
2.7. Number of Items per Order	14
2.8. Home and Remote Payment Transactions.....	14
2.9. Non-Primary Key Transactions.....	15
2.10. Skipped Delivery Transactions	15
2.11. Mix of Transaction Types	15
2.12. Queuing Mechanism of Delivery	15
3 Clause 3: Transaction and System Properties	17
3.1. Atomicity Requirements	17
3.2. Consistency Requirements	17
3.3. Isolation Requirements.....	18
3.4. Durability Requirements	18
4 Clause 4: Scaling and Data Base Population Related Items.....	20
4.1. Cardinality of Tables.....	20
4.2. Distribution of Tables and Logs.....	20
4.3. Data Base Model Implemented.....	21
4.4. Partitions/Replications Mapping	21
4.5. 60-Day Space Calculations	26
5 Clause 5: Performance Metrics and Response Time Related Items	27
5.1. Response Times	27
5.2. Keying and Think Times.....	27
5.3. Response Time Frequency Distribution	28
5.4. Performance Curve for Response Time versus Throughput	30
5.5. Think Time Frequency Distribution.....	31
5.6. Throughput versus Elapsed Time.....	32
5.7. Steady State Determination.....	32
5.8. Work Performed During Steady State.....	32
5.9. Measurement Interval.....	34
6 Clause 6: SUT, Driver, and Communication Definition Related Items	35
6.1. RTE Availability	35
6.2. Functionality and Performance of Emulated Components.....	35
6.3. Network Bandwidth	35
6.4. Operator Intervention	35
7 Clause 7: Pricing Related Items	36
7.1. Hardware and Programs Used.....	36
7.2. Three Year Cost of System Configuration.....	36
7.3. Availability Dates	36
7.4. Statement of tpmC and Price/Performance	36

8	Clause 9: Audit Related Items.....	37
9	Appendix A: Client Server Code.....	39
9.1.	Client/Terminal Handler Code.....	39
9.2.	Transaction Code	50
10	Appendix B: Tunable Parameters	82
10.1.	Database Parameters	82
10.2.	Transaction Monitor Parameters	84
10.3.	Linux Parameters	86
11	Appendix C: Database Setup Code.....	93
11.1.	Database Creation Scripts	93
11.2.	Data Generation	300
12	Appendix D: Pricing	312

Abstract

This report documents the full disclosure information required by the TPC Benchmark™ C Standard Specification Revision 5.8 dated December, 2006, for measurements on the IBM System x3950. The software used on the IBM System x3950 includes SUSE Linux Enterprise Server 10 for Intel EM64T operating system and DB2 9 data server. Microsoft COM+ is used as the transaction manager.

IBM System x3950

Company Name	System Name	Data Base Software	Operating System Software
IBM Corporation	IBM System x3950	DB2 9	SUSE Linux Enterprise Server 10 for Intel EM64T

Total System Cost	TPC-C Throughput	Price/Performance
<ul style="list-style-type: none">• Hardware• Software• 3 Years Maintenance	Sustained maximum throughput of system running TPC-C expressed in transactions per minute	Total system cost/tpmC
\$2,784,599 USD	511,342	\$5.45 USD

Preface

TPC Benchmark™ C Standard Specification was developed by the Transaction Processing Performance Council (TPC). It was released on August 13, 1992 and updated with revision 5.8 in December 2006.

This is the full disclosure report for benchmark testing of the IBM System x3950 and DB2 9 according to the TPC Benchmark™ C Standard Specification.

TPC Benchmark™ C exercises the system components necessary to perform tasks associated with that class of on-line transaction processing (OLTP) environments emphasizing a mixture of read-only and update intensive transactions. This is a complex OLTP application environment exercising a breadth of system components associated by such environments characterized by:

- The simultaneous execution of multiple transaction types that span a breadth of complexity
- On-line and deferred transaction execution modes
- Multiple on-line terminal sessions
- Moderate system and application execution time
- Significant disk input/output
- Transaction integrity (ACID properties)
- Non-uniform distribution of data access through primary and secondary keys
- Data bases consisting of many tables with a wide variety of sizes, attributes, and relationships
- Contention on data access and update

This benchmark defines four on-line transactions and one deferred transaction, intended to emulate functions that are common to many OLTP applications. However, this benchmark does not reflect the entire range of OLTP requirements. The extent to which a customer can achieve the results reported by a vendor is highly dependent on how closely TPC-C approximates the customer application. The relative performance of systems derived from this benchmark does not necessarily hold for other workloads or environments. Extrapolations to any other environment are not recommended.

Benchmark results are highly dependent upon workload, specific application requirements, and systems design and implementation. Relative system performance will vary as a result of these and other factors. Therefore, TPC-C should not be used as a substitute for a specific customer application benchmarks when critical capacity planning and/or product evaluation decisions are contemplated.

The performance metric reported by TPC-C is a “business throughput” measuring the number of orders processed per minute. Multiple transactions are used to simulate the business activity of processing an order, and each transaction is subject to a response time constraint. The performance metric for this benchmark is expressed in transactions-per-minute-C (tpmC). To be compliant with the TPC-C standard, all references to tpmC results must include the tpmC rate, the associated price-per-tpmC, and the availability date of the priced configuration.

0 General Items

0.1. Application Code Disclosure

The application program (as defined in Clause 2.1.7) must be disclosed. This includes, but is not limited to, the code implementing the five transactions and the terminal input and output functions.

Appendix A contains the application code for the five TPC Benchmark™ C transactions.

0.2. Benchmark Sponsor

A statement identifying the benchmark sponsor(s) and other participating companies must be provided.

This benchmark was sponsored by **International Business Machines Corporation.**

0.3. Parameter Settings

Settings must be provided for all customer-tunable parameters and options which have been changed from the defaults found in actual products, including but not limited to:

- *Data Base tuning options*
- *Recovery/commit options*
- *Consistency/locking options*
- *Operating system and application configuration parameters.*

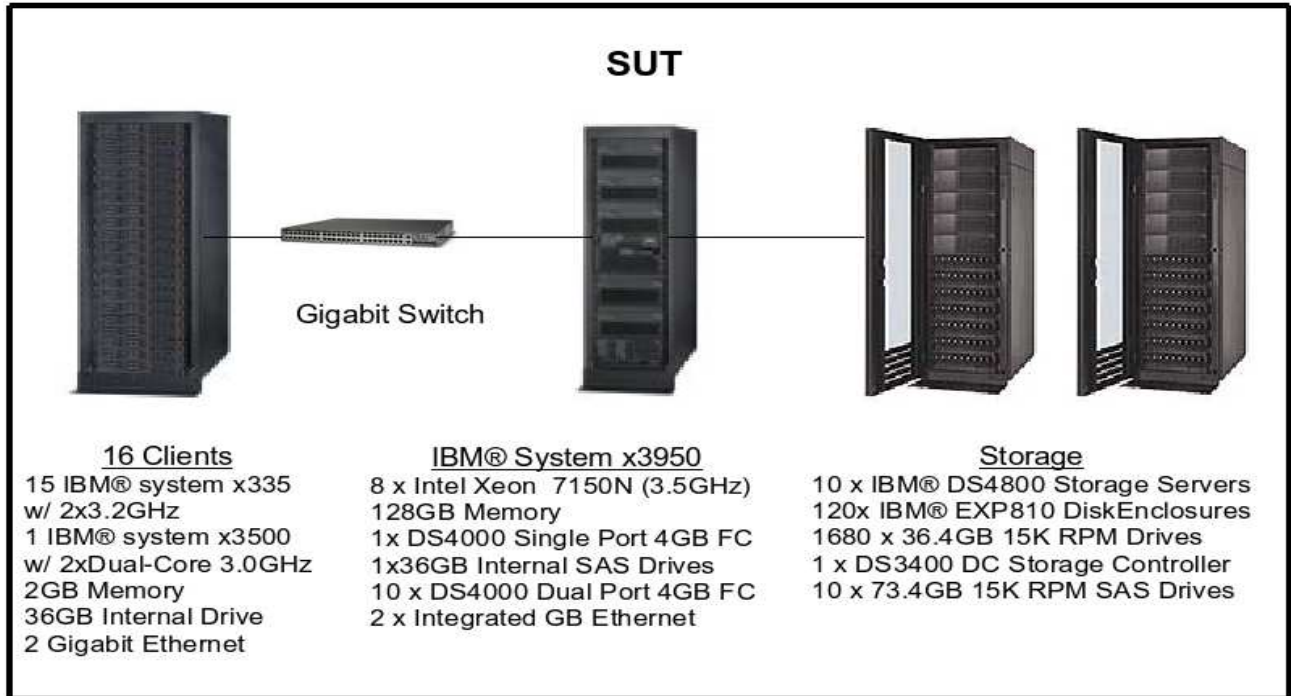
Appendix B contains the system, data base, and application parameters changed from their default values used in these TPC Benchmark™ C tests.

0.4. Configuration Diagrams

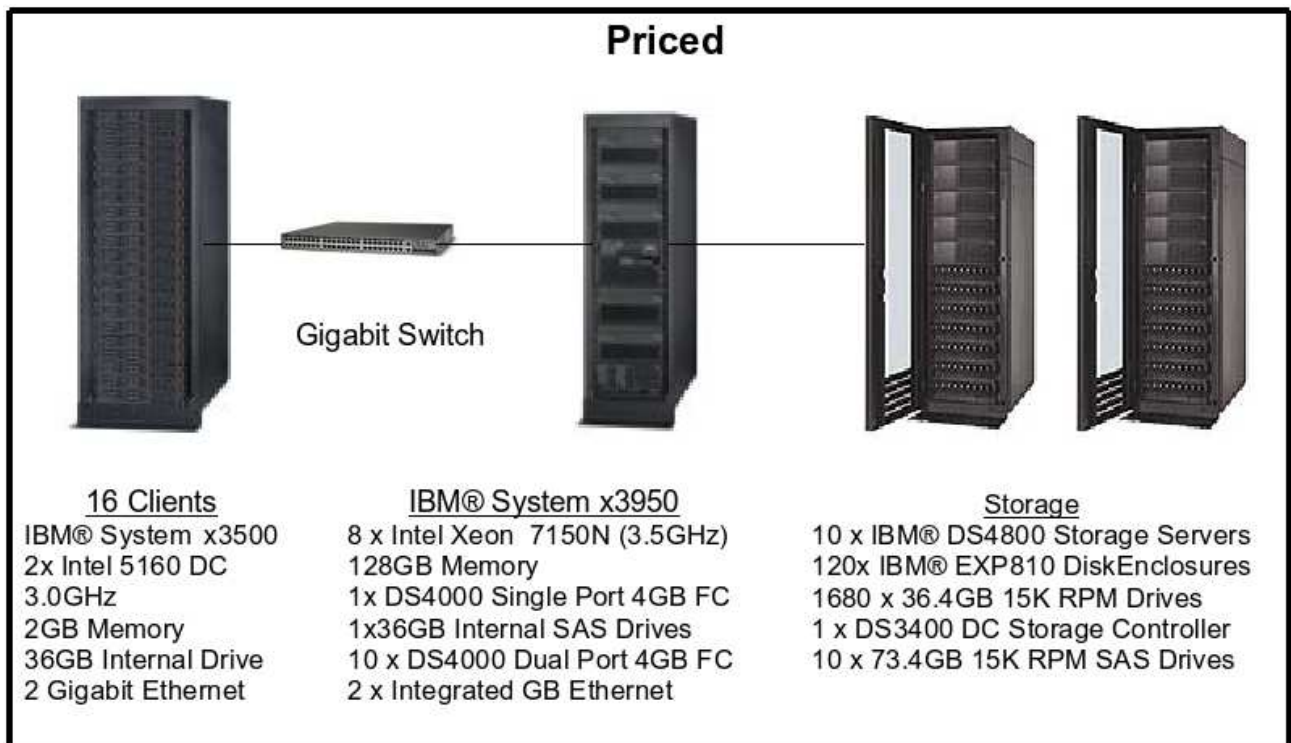
Diagrams of both measured and priced configurations must be provided, accompanied by a description of the differences. This includes, but is not limited to:

- *Number and type of processors*
- *Size of allocated memory, and any specific mapping/partitioning of memory unique to the test*
- *Number and type of disk units (and controllers, if applicable)*
- *Number of channels or bus connections to disk units, including the protocol type*
- *Number of LAN (e.g. Ethernet) connections, including routers, work stations, terminals, etc, that were physically used in the test or are incorporated into the pricing structure (see Clause 8.1.8)*
- *Type and run-time execution location of software components (e.g. DBMS, client processes, transaction monitors, software drivers, etc)*

IBM System x3950 Benchmark Configuration



IBM System x3950 Priced Configuration



The measured configuration consisted of 1 x3500 client with two 3.0GHz Intel 5160 Dual Core processors and 15 x335 clients each with two 3.2GHz Intel Xeon DP processors. However, 16 x3500 clients were priced. Based on the response times and throughput values collected from each of the clients during the run and submitted to the auditor, the auditor determined that this upgrade does not have a material effect on the reported performance. All other components, including the Fibre Channel disk subsystem, adapters, HBAs, and the system under test, were priced as measured. For the priced configuration, see the Executive Summary.

1 Clause 1: Logical Data Base Design Related Items

1.1. Table Definitions

Listings must be provided for all table definition statements and all other statements used to setup the data base.

Appendix C contains the table definitions and the database load programs used to build the data base.

1.2. Database Organization

The physical organization of tables and indices, within the data base, must be disclosed.

Physical space was allocated to DB2 on the server disks according to the details provided in Appendix C.

1.3. Insert and/or Delete Operations

It must be ascertained that insert and/or delete operations to any of the tables can occur concurrently with the TPC-C transaction mix. Furthermore, any restriction in the SUT data base implementation that precludes inserts beyond the limits defined in Clause 1.4.11 must be disclosed. This includes the maximum number of rows that can be inserted and the maximum key value for these new rows.

There were no restrictions on insert and/or delete operations to any of the tables. The space required for an additional five percent of the initial table cardinality was allocated to DB2 and priced as static space.

The insert and delete functions were verified by the auditor. In addition, the auditor verified that the primary key for each database table could be updated outside the range of its initial partition.

1.4. Horizontal or Vertical Partitioning

While there are few restrictions placed upon horizontal or vertical partitioning of tables and rows in the TPC-C benchmark, any such partitioning must be disclosed.

WAREHOUSE, DISTRICT, STOCK, CUSTOMER, HISTORY, ORDERS, ORDERLINE, and NEWORDER were horizontally partitioned into multiple tables.

Each table partition contains data associated with a range of 520 warehouses.

For each partitioned table, a view was created over all table partitions to provide full transparency of data manipulation.

No tables were replicated.

2 Clause 2: Transaction & Terminal Profiles Related Items

2.1. Verification for the Random Number Generator

The method of verification for the random number generation must be disclosed.

The seeds for each user were captured and verified by the auditor to be unique. In addition, the contents of the database were systematically searched and randomly sampled by the auditor for patterns that would indicate the random number generator had affected any kind of a discernible pattern; none were found.

2.2. Input/Output Screens

The actual layouts of the terminal input/output screens must be disclosed.

The screen layouts are now presented in HTML 1.0 web pages. Clauses 2.4.3, 2.5.3, 2.6.3, 2.7.3, and 2.8.3 of the TPC-C specifications were used as guidelines for html character placement.

2.3. Priced Terminal Features

The method used to verify that the emulated terminals provide all the features described in Clause 2.2.2.4 must be explained. Although not specifically priced, the type and model of the terminals used for the demonstration in 8.1.3.3 must be disclosed and commercially available (including supporting software and maintenance).

The emulated workstations, IBM eServer x3500 systems, are commercially available and support all of the requirements in Clause 2.2.2.4.

2.4. Presentation Managers

Any usage of presentation managers or intelligent terminals must be explained.

The workstations did not involve screen presentations, message bundling or local storage of TPC-C rows. All screen processing was handled by the client system. All data manipulation was handled by the server system.

2.5. Home and Remote Order-lines

The percentage of home and remote order-lines in the New-Order transactions must be disclosed.

Table 2-1 shows the percentage of home and remote transactions that occurred during the measurement period for the New-Order transactions.

2.6. New-Order Rollback Transactions

The percentage of New-Order transactions that were rolled back as a result of an illegal item number must be disclosed.

Table 2-1 shows the percentage of New-Order transactions that were rolled back due to an illegal item being entered.

2.7. Number of Items per Order

The number of items per order entered by New-Order transactions must be disclosed.

Table 2-1 show the average number of items ordered per New-Order transaction.

2.8. Home and Remote Payment Transactions

The percentage of home and remote Payment transactions must be disclosed.

Table 2-1 shows the percentage of home and remote transactions that occurred during the measurement period for the Payment transactions.

2.9. Non-Primary Key Transactions

The percentage of Payment and Order-Status transactions that used non-primary key (C_LAST) access to the data base must be disclosed.

Table 2-1 shows the percentage of non-primary key accesses to the data base by the Payment and Order-Status transactions.

2.10. Skipped Delivery Transactions

The percentage of Delivery transactions that were skipped as a result of an insufficient number of rows in the NEW-ORDER table must be disclosed.

Table 2-1 shows the percentage of Delivery transactions missed due to a shortage of supply of rows in the NEW-ORDER table.

2.11. Mix of Transaction Types

The mix (i.e. percentages) of transaction types seen by the SUT must be disclosed.

Table 2-1 shows the mix percentage for each of the transaction types executed by the SUT.

New Order	IBM System x3950
Percentage of Home order lines	99.00%
Percentage of Remote order lines	1.00%
Percentage of Rolled Back Transactions	1.00%
Average Number of Items per order	10
Payment	
Percentage of Home transactions	85.00%
Percentage of Remote transactions	15.00%
Non-Primary Key Access	
Percentage of Payment using C_LAST	60.00%
Percentage of Order-Status using C_LAST	59.99%
Delivery	
Delivery transactions skipped	0
Transaction Mix	
New-Order	44.96%
Payment	43.02%
Order-Status	4.01%
Delivery	4.01%
Stock-Level	4.01%

Table 2-1: Numerical Quantities for Transaction and Terminal Profiles

2.12. Queuing Mechanism of Delivery

The queuing mechanism used to defer execution of the Delivery transaction must be disclosed.

The Delivery transaction was submitted to an ISAPI queue that is separate from the COM+ queue that the other transactions used. This queue is serviced by a variable amount of threads that are separate from the worker threads inside the web server. Web server threads are able to complete the on-line part of the Delivery transaction and immediately return successful queuing responses to the drivers. The threads servicing the queue are responsible for completing the deferred part of the transaction asynchronously.

3 Clause 3: Transaction and System Properties

The results of the ACID test must be disclosed along with a description of how the ACID requirements were met.

All ACID tests were conducted according to specification.

3.1. Atomicity Requirements

The system under test must guarantee that data base transactions are atomic; the system will either perform all individual operations on the data, or will assure that no partially-completed operations leave any effects on the data.

3.1.1. Atomicity of Completed Transaction

Perform the Payment transaction for a randomly selected warehouse, district, and customer (by customer number) and verify that the records in the CUSTOMER, DISTRICT, and WAREHOUSE tables have been changed appropriately.

The following steps were performed to verify the Atomicity of completed transactions.

1. The balance, BALANCE_1, was retrieved from the CUSTOMER table for a random Customer, District and Warehouse combination.
2. The Payment transaction was executed and committed for the Customer, District, and Warehouse combination used in step 1.
3. The balance, BALANCE_2, was retrieved again for the Customer, District, and Warehouse combination used in step 1 and step 2. It was verified that BALANCE_1 was greater than BALANCE_2 by the amount of the Payment transaction.

3.1.2. Atomicity of Aborted Transactions

Perform the Payment transaction for a randomly selected warehouse, district, and customer (by customer number) and substitute a ROLLBACK of the transaction for the COMMIT of the transaction. Verify that the records in the CUSTOMER, DISTRICT, and WAREHOUSE tables have NOT been changed.

The following steps were performed to verify the Atomicity of the aborted Payment transaction:

1. The Payment application code was implemented with a Perl script that allowed the transaction to be rolled back rather than committed.
2. The balance, BALANCE_3, was retrieved from the Customer table for the same Customer, District, and Warehouse combination used in the completed Payment transaction Atomicity test.
3. The Payment transaction was executed for the Customer, District and Warehouse used in step 2. Rather than commit the transaction, the transaction was rolled back.
4. The balance, BALANCE_4 was retrieved again for the Customer, District, and Warehouse combination used in step 2. It was verified that BALANCE_4 was equal to BALANCE_3, demonstrating that there were no remaining effects of the rolled back Payment transaction.

3.2. Consistency Requirements

Consistency is the property of the application that requires any execution of a data base transaction to take the data base from one consistent state to another, assuming that the data base is initially in a consistent state.

Verify that the data base is initially consistent by verifying that it meets the consistency conditions defined in Clauses 3.3.2.1 to 3.3.2.4. Describe the steps used to do this in sufficient detail so that the steps are independently repeatable.

The specification defines 12 consistency conditions of which the following four are required to be explicitly demonstrated:

1. The sum of balances (d_ytd) for all Districts within a specific Warehouse is equal to the balance (w_ytd) of that Warehouse.
2. For each District within a Warehouse, the next available Order ID (d_next_o_id) minus one is equal to the most recent Order ID [max(o_id)] for the Order table associated with the preceding District and Warehouse.

Additionally, that same relationship exists for the most recent Order ID [max(o_id)] for the New Order table associated with the same District and Warehouse. Those relationships can be illustrated as follows:

$$d_next_o_id - 1 = \max(o_id) = \max(no_o_id)$$

where (d_w_id = o_w_id = no_w_id) and (d_id = o_d_id = no_d_id)

3. For each District within a Warehouse, the value of the most recent Order ID [max(no_o_id)] minus the first Order ID [min(no_o_id)] plus one, for the New Order table associated with the District and Warehouse equals the number of rows in that New Order table. That relationship can be illustrated as follows:

$$\max(no_o_id) - \min(no_o_id) + 1 = \text{number of rows in New Order for the Warehouse/District}$$

4. For each District within a Warehouse, the sum of Order Line counts [sum(o_ol_cnt)] for the Order table associated with the District equals the number of rows in the Order Line table associated with the same District. That relationship can be illustrated as follows:

$$\text{sum}(o_ol_cnt) = \text{number of rows in the Order Line table for the Warehouse/District}$$

An RTE driven run was executed against a freshly loaded database. After the run the 4 consistency conditions defined above were tested using a script to issue queries to the database. All queries showed that the database was still in a consistent state.

3.3. Isolation Requirements

Operations of concurrent data base transactions must yield results which are indistinguishable from the results which would be obtained by forcing each transaction to be serially executed to completion in some order.

The benchmark specification defines nine tests to demonstrate the property of transaction isolation. The tests, described in Clauses 3.4.2.1 – 3.4.2.9 were all successfully executed using a series of scripts. Case A was observed during the execution of Isolation Tests 7-9.

3.4. Durability Requirements

The tested system must guarantee durability: the ability to preserve the effects of committed transactions and insure data base consistency after recovery from any one of the failures listed in Clause 3.5.3

- *Permanent irrecoverable failure of any single durable medium containing TPC-C database tables or recovery log data (this test includes failure of all or part of memory)*
- *Instantaneous interruption (system crash/system hang) in processing that requires system reboot to recover*
- *Failure of all or part of memory (loss of contents)*

Failure of Log Disk, Log Fast Write Cache, Instantaneous Interruption and Memory Failure:

This test was conducted on a fully-scaled database. The following steps were successfully performed:

1. The current count of the total number of orders was determined by the sum of D_NEXT_O_ID of all rows in the DISTRICT table giving SUM_1.
2. A full load test was started and allowed to run for over 10 minutes.
3. One of the disks containing the transaction log was removed. Since the log was implemented as a RAID-5 array, DB2 continued to process the transactions successfully.
4. The test continued for at least another 5 minutes.
5. A storage controller holding one copy of the mirrored write cache for the log was removed from the storage subsystem. The contents of the write cache mirrors became out-of-sync.

6. The system was subsequently powered off, which removed power from all system components, including memory.
7. The storage controller from step 5 was reinserted into the storage subsystem. The controller detected the cache out-of-sync condition and synchronized with the write cache mirror in the other controller.
8. The disk from step 3 was replaced.
9. The system was powered back on and DB2 was allowed to recover.
10. Step 1 was performed returning the value for SUM_2. It was verified that SUM_2 was greater than SUM_1 plus the completed New_Order transactions recorded by the RTE. The additional transactions found in the database were attributed to in-flight activity at the time of the failure.
11. Consistency condition 3 was verified.

Failure of Durable Medium Containing TPC-C Database Tables:

This test was conducted on a fully-scaled database. The following steps were successfully performed:

1. The contents of the database were backed up in full.
2. The current count of the total number of orders was determined by the sum of D_NEXT_O_ID of all rows in the DISTRICT table giving SUM_1.
3. A scaled-down test was started with 12.5% of the full load.
4. A disk containing the TPC-C tables was removed, causing DB2 to report numerous errors.
5. The system was subsequently shutdown.
6. The disk was reinserted.
7. The system was powered back on.
8. The full database was restored from the backup copy in step 1.
9. DB2 was restarted and the transactions in the log were applied to the database.
10. Step 2 was performed returning SUM_2. It was verified that SUM_2 was equal to SUM_1 plus the number of completed New_Order transactions recorded by the RTE.
11. Consistency condition 3 was verified.

4 Clause 4: Scaling and Data Base Population Related Items

4.1. Cardinality of Tables

The cardinality (e.g., the number of rows) of each table, as it existed at the start of the benchmark run, must be disclosed.

Table 4-1 portrays the TPC Benchmark™ C defined tables and the number of rows for each table as they were built initially.

Table Name	Number of Rows
Warehouse	41,600
District	416,000
Customer	1,248,000,000
History	1,248,000,000
Order	1,248,000,000
New Order	374,400,000
Order Line	12,479,999,000
Stock	4,160,000,000
Item	100,000

Table 4-1: Initial Cardinality of Tables

4.2. Distribution of Tables and Logs

The distribution of tables and logs across all media must be explicitly depicted for the tested and priced systems.

There is one Logical Disk (LD) for the logs.

There is one storage adapter for the log LD.

The log LD is configured as a RAID5 (9+p) disk array, with 10 physical disks. Each physical disk has a capacity of 73.4 GB. The total Raid 5 capacity available is 660.6 GB.

There are 80 Logical Disks (LD) for the tables.

There are 10 storage adapters for the tables. Each adapter is assigned 8 LDs.

Each LD is configured as a RAID0 disk array, with 21 physical disks.

There is a total of 1680 data disks and each physical disk has a capacity of 36.4 GB drives.

Each LD is partitioned identically. Each LD contains 14 partitions, 12 of which are used for DB2 Containers. Partitions are laid out on an LD as follows:

Partition#	Blocks	Container Usage
1	7968	Warehouse
2	8001	District

- 3 7969 Item
- 4 Extended partition
- 5 18450558 Stock
- 6 13253559 Customer
- 7 963827 Customer Index
- 8 1445773 History
- 9 963849 Orders
- 10 803195 Order Index
- 11 21687681 Order Line
- 12 321237 New OrdersA
- 13 321237 New OrdersB
- 14 677265552 Not used for data tables

Tablespaces are laid out to use LDs as follows:

- Warehouse 80 tablespaces each using 1 LD
- District 80 tablespaces each using 1 LD
- Item One tablespace using 80 LDs
- Stock 80 tablespaces each using 1 LD
- Customer 80 tablespaces each using 1 LD
- Customer Index 80 tablespaces each using 1 LD
- History 80 tablespaces each using 1 LD
- Orders 80 tablespaces each using 1 LD
- Order Index 80 tablespaces each using 1 LD
- Order Line 80 tablespaces each using 1 LD
- New OrdersA 80 tablespaces each using 1 LD
- New OrdersB 80 tablespaces each using 1 LD

4.3. Data Base Model Implemented

A statement must be provided that describes the data base model implemented by the DBMS used.

The database manager used for this testing was DB2 9. DB2 is a relational DBMS. DB2 remote stored procedures and embedded SQL statements were used. The DB2 stored procedures were invoked via SQL CALL statements. Both the client application and stored procedures were written in embedded C code.

4.4. Partitions/Replications Mapping

The mapping of data base partitions/replications must be explicitly described.

The specifics of the distribution of partitioned and non-partitioned tables across the physical media can be found in tables 4-2.

Data Distribution Logical Disks (LDs)			
PARTITION	Storage Adapter	RAW Device	Assigned Tablespace
LD1 – LD8 Partition 1	FC1	raw1 –raw8	ts_wh_01-ts_wh_08
LD9 – LD16 Partition 1	FC2	raw9 –raw16	ts_wh_09-ts_wh_16
LD17 – LD24 Partition 1	FC3	raw17 –raw24	ts_wh_17-ts_wh_24
LD25 – LD32 Partition 1	FC4	raw25 –raw32	ts_wh_25-ts_wh_32
LD33 – LD40 Partition 1	FC5	raw33 –raw40	ts_wh_33_ts_wh_40
LD41 – LD48 Partition 1	FC6	raw41 –raw48	ts_wh_41_ts_wh_48

LD49 – LD56 Partition 1	FC7	raw49 –raw56	ts_wh_49_ts_wh_56
LD57 – LD64 Partition 1	FC8	raw57 –raw64	ts_wh_57_ts_wh_64
LD65 – LD72 Partition 1	FC9	raw65 –raw72	ts_wh_65_ts_wh_72
LD73 – LD80 Partition 1	FC10	raw73 –raw80	ts_wh_73_ts_wh_80
LD1 – LD8 Partition 2	FC1	raw101 –raw108	ts_dis_01-ts_dis_08
LD9 – LD16 Partition 2	FC2	raw109 –raw116	ts_dis_09-ts_dis_16
LD17 – LD24 Partition 2	FC3	raw117 –raw124	ts_dis_17-ts_dis_24
LD25 – LD32 Partition 2	FC4	raw125 –raw132	ts_dis_25-ts_dis_32
LD33 – LD40 Partition 2	FC5	raw133–raw140	ts_dis_33-ts_dis_40
LD41 – LD48 Partition 2	FC6	raw141 –raw148	ts_dis_41_ts_dis_48
LD49 – LD56 Partition 2	FC7	raw149 –raw156	ts_dis_49_ts_dis_56
LD57 – LD64 Partition 2	FC8	raw157 –raw164	ts_dis_57_ts_dis_64
LD65 – LD72 Partition 2	FC9	raw165 –raw172	ts_dis_65_ts_dis_72
LD73 – LD80 Partition 2	FC10	raw173 –raw180	ts_dis_73_ts_dis_80
LD1 – LD8 Partition 3	FC1	raw201 –raw208	ts_item
LD9 – LD16 Partition 3	FC2	raw209 –raw216	ts_item
LD17 – LD24 Partition 3	FC3	raw217 –raw224	ts_item
LD25 – LD32 Partition 3	FC4	raw225 –raw232	ts_item
LD33 – LD40 Partition 3	FC5	raw233–raw240	ts_item
LD41 – LD48 Partition 3	FC6	raw241 –raw248	ts_item
LD49 – LD56 Partition 3	FC7	raw249 –raw256	ts_item
LD57 – LD64 Partition 3	FC8	raw257 –raw264	ts_item
LD65 – LD72 Partition 3	FC9	raw265 –raw272	ts_item
LD73 – LD80 Partition 3	FC10	raw273 –raw280	ts_item
LD1 – LD8 Partition 5	FC1	raw301 –raw308	ts_stock_01-ts_stock_08
LD9 – LD16 Partition 5	FC2	raw309 –raw316	ts_stock_09-ts_stock_16
LD17 – LD24 Partition 5	FC3	raw317 –raw324	ts_stock_17-ts_stock_24
LD25 – LD32 Partition 5	FC4	raw325 –raw332	ts_stock_25-ts_stock_32
LD33 – LD40 Partition 5	FC5	raw333–raw340	ts_stock_33-ts_stock_40
LD41 – LD48 Partition 5	FC6	raw341 –raw348	ts_stock_41-ts_stock_48
LD49 – LD56 Partition 5	FC7	raw349 –raw356	ts_stock_49_ts_stock_56
LD57 – LD64 Partition 5	FC8	raw357 –raw364	ts_stock_57_ts_stock_64
LD65 – LD72 Partition 5	FC9	raw365 –raw372	ts_stock_65_ts_stock_72
LD73 – LD80 Partition 5	FC10	raw373 –raw380	ts_stock_73_ts_stock_80

LD1 – LD8 Partition 6	FC1	raw401 –raw408	ts_customer_01-ts_customer_08
LD9 – LD16 Partition 6	FC2	raw409 –raw416	ts_customer_09-ts_customer_16
LD17 – LD24 Partition 6	FC3	raw417 –raw424	ts_customer_17-ts_customer_24
LD25 – LD32 Partition 6	FC4	raw425 –raw432	ts_customer_25-ts_customer_32
LD33 – LD40 Partition 6	FC5	raw433–raw440	ts_customer_33-ts_customer_40
LD41 – LD48 Partition 6	FC6	raw441 –raw448	ts_customer_41-ts_customer_48
LD49 – LD56 Partition 6	FC7	raw449 –raw456	ts_customer_49_ts_customer_56
LD57 – LD64 Partition 6	FC8	raw457 –raw464	ts_customer_57_ts_customer_64
LD65 – LD72 Partition 6	FC9	raw465 –raw472	ts_customer_65_ts_customer_72
LD73 – LD80 Partition 6	FC10	raw473 –raw480	ts_customer_73_ts_customer_80
LD1 – LD8 Partition 7	FC1	raw501 –raw508	is_customer_01-is_customer_08
LD9 – LD16 Partition 7	FC2	raw509 –raw516	is_customer_09-is_customer_16
LD17 – LD24 Partition 7	FC3	raw517 –raw524	is_customer_17-is_customer_24
LD25 – LD32 Partition 7	FC4	raw525 –raw532	is_customer_25-is_customer_32
LD33 – LD40 Partition 7	FC5	raw533–raw540	is_customer_33-is_customer_40
LD41 – LD48 Partition 7	FC6	raw541 –raw548	is_customer_41-is_customer_48
LD49 – LD56 Partition 7	FC7	raw549 –raw556	is_customer_49_is_customer_56
LD57 – LD64 Partition 7	FC8	raw557 –raw564	is_customer_57_is_customer_64
LD65 – LD72 Partition 7	FC9	raw565 –raw572	is_customer_65_is_customer_72
LD73 – LD80 Partition 7	FC10	raw573 –raw580	is_customer_73_is_customer_80
LD1 – LD8 Partition 8	FC1	raw601 –raw608	ts_history_01-ts_history_08
LD9 – LD16 Partition 8	FC2	raw609 –raw616	ts_history_09-ts_history_16
LD17 – LD24 Partition 8	FC3	raw617 –raw624	ts_history_17-ts_history_24
LD25 – LD32 Partition 8	FC4	raw625 –raw632	ts_history_25-ts_history_32
LD33 – LD40 Partition 8	FC5	raw633–raw640	ts_history_33-ts_history_40
LD41 – LD48 Partition 8	FC6	raw641 –raw648	ts_history_41-ts_history_48
LD49 – LD56 Partition 8	FC7	raw649 –raw656	ts_history_49_ts_history_56
LD57 – LD64 Partition 8	FC8	raw657 –raw664	ts_history_57_ts_history_64
LD65 – LD72 Partition 8	FC9	raw665 –raw672	ts_history_65_ts_history_72
LD73 – LD80 Partition 8	FC10	raw673 –raw680	ts_history_73_ts_history_80
LD1 – LD8 Partition 9	FC1	raw701 –raw708	ts_order_01-ts_order_08
LD9 – LD16 Partition 9	FC2	raw709 –raw716	ts_order_09-ts_order_16
LD17 – LD24 Partition 9	FC3	raw717 –raw724	ts_order_17-ts_order_24
LD25 – LD32 Partition 9	FC4	raw725 –raw732	ts_order_25-ts_order_32

LD33 – LD40 Partition 9	FC5	raw733–raw740	ts_order_33-ts_order_40
LD41 – LD48 Partition 9	FC6	raw741 –raw748	ts_order_41-ts_order_48
LD49 – LD56 Partition 9	FC7	raw749 –raw756	ts_order_49_ts_order_56
LD57 – LD64 Partition 9	FC8	raw757 –raw764	ts_order_57_ts_order_64
LD65 – LD72 Partition 9	FC9	raw765 –raw772	ts_order_65_ts_order_72
LD73 – LD80 Partition 9	FC10	raw773 –raw780	ts_order_73_ts_order_80
LD1 – LD8 Partition 10	FC1	raw801 –raw808	is_order_01-is_order_08
LD9 – LD16 Partition 10	FC2	raw809 –raw816	is_order_09-is_order_16
LD17 – LD24 Partition 10	FC3	raw817 –raw824	is_order_17-is_order_24
LD25 – LD32 Partition 10	FC4	raw825 –raw832	is_order_25-is_order_32
LD33 – LD40 Partition 10	FC5	raw833–raw840	is_order_33-is_order_40
LD41 – LD48 Partition 10	FC6	raw841 –raw848	is_order_41-is_order_48
LD49 – LD56 Partition 10	FC7	raw849 –raw856	is_order_49_is_order_56
LD57 – LD64 Partition 10	FC8	raw857 –raw864	is_order_57_is_order_64
LD65 – LD72 Partition 10	FC9	raw865 –raw872	is_order_65_is_order_72
LD73 – LD80 Partition 10	FC10	raw873 –raw880	is_order_73_is_order_80
LD1 – LD8 Partition 11	FC1	raw901 –raw908	ts_orderline_01-ts_orderline_08
LD9 – LD16 Partition 11	FC2	raw909 –raw916	ts_orderline_09-ts_orderline_16
LD17 – LD24 Partition 11	FC3	raw917 –raw924	ts_orderline_17-ts_orderline_24
LD25 – LD32 Partition 11	FC4	raw925 –raw932	ts_orderline_25-ts_orderline_32
LD33 – LD40 Partition 11	FC5	raw933–raw940	ts_orderline_33-ts_orderline_40
LD41 – LD48 Partition 11	FC6	raw941 –raw948	ts_orderline_41-ts_orderline_48
LD49 – LD56 Partition 11	FC7	raw949 –raw956	ts_orderline_49_ts_orderline_56
LD57 – LD64 Partition 11	FC8	raw957 –raw964	ts_orderline_57_ts_orderline_64
LD65 – LD72 Partition 11	FC9	raw965 –raw972	ts_orderline_65_ts_orderline_72
LD73 – LD80 Partition 11	FC10	raw973 –raw980	ts_orderline_73_ts_orderline_80
LD1 – LD8 Partition 12	FC1	raw1001 – raw1008	ts_newwordA_01-ts_newwordA_08
LD9 – LD16 Partition 12	FC2	raw1009 – raw1016	ts_newwordA_09-ts_newwordA_16
LD17 – LD24 Partition 12	FC3	raw1017 – raw1024	ts_newwordA_17-ts_newwordA_24
LD25 – LD32 Partition 12	FC4	raw1025 – raw1032	ts_newwordA_25-ts_newwordA_32
LD33 – LD40 Partition 12	FC5	raw1033–raw1040	ts_newwordA_33-ts_newwordA_40
LD41 – LD48 Partition 12	FC6	raw1041 – raw1048	ts_newwordA_41-ts_newwordA_48

LD49 – LD56 Partition 12	FC7	raw1049 – raw1056	ts_newwordA_49_ts_newwordA_56
LD57 – LD64 Partition 12	FC8	raw1057 – raw1064	ts_newwordA_57_ts_newwordA_64
LD65 – LD72 Partition 12	FC9	raw1065 – raw1072	ts_newwordA_65_ts_newwordA_72
LD73 – LD80 Partition 12	FC10	raw1073 – raw1080	ts_newwordA_73_ts_newwordA_80
LD1 – LD8 Partition 13	FC1	raw1141 – raw1148	ts_newwordB_01-ts_newwordB_08
LD9 – LD16 Partition 13	FC2	raw1149 – raw1156	ts_newwordB_09-ts_newwordB_16
LD17 – LD24 Partition 13	FC3	raw1157 – raw1164	ts_newwordB_17-ts_newwordB_24
LD25 – LD32 Partition 13	FC4	raw1165 – raw1172	ts_newwordB_25-ts_newwordB_32
LD33 – LD40 Partition 13	FC5	raw1173 – raw1180	ts_newwordB_33-ts_newwordB_40
LD41 – LD48 Partition 13	FC6	raw1141 – raw1148	ts_newwordB_41-ts_newwordB_48
LD49 – LD56 Partition 12	FC7	raw1149 – raw1156	ts_newwordB_49_ts_newwordB_56
LD57 – LD64 Partition 12	FC8	raw1157 – raw1164	ts_newwordB_57_ts_newwordB_64
LD65 – LD72 Partition 12	FC9	raw1165 – raw1172	ts_newwordB_65_ts_newwordB_72
LD73 – LD80 Partition 12	FC10	raw1173 – raw1180	ts_newwordB_73_ts_newwordB_80

Table 4-2: IBM System x3950 Data Distribution Benchmark Configuration

4.5. 60-Day Space Calculations

Details of the 60 day space computations along with proof that the database is configured to sustain 8 hours of growth for the dynamic tables (Order, Order-Line, and History) must be disclosed

All data sizes in MB unless otherwise stated					
Warehouses	41,600				
Measured TpmC	511,342				
Table	Rows	Table	Index	5% Space	Total Space
Warehouse	41,600	50	0	3	53
District	416,000	90	0	5	95
Item	100,000	10	0	1	11
Stock	4,160,000,000	1,354,250	0	67,713	1,421,963
Customer	1,248,000,000	975,080	60,100	51,759	1,086,939
New-Order	374,400,000	28,800	0	1,440	30,240
Orders	1,248,000,000	47,844	34,940	0	82,784
Order-Line	12,480,000,000	836,140	0	0	836,140
History	1,248,000,000	76,960	0	0	76,960
Additional Overhead		719,496			719,496
Free Space	136,691				
Dynamic Space	960,944		30 Minute log Computations		
Static Space	3,293,735		Log Written (KB)		36,356,416
Daily Growth	188,989		New-Order Txns		15,340,260
Daily Spread	0		Log Written per New-Order (KB)		2.37
Data Storage Requirement					
60 Days (MB)	14,633,070				
60 Days (GB)	14,290				
Log Storage Requirement					
8 Hours (GB)	554.75				
Disk Sizing					
	Formatted	SUT		Priced	
Disk Type	Capacity (GB)	# of Disks	Capacity (GB)	# of Disks	Capacity (GB)
DB FastT 36.4GB	36.40	1,680	61,152	1,680	61,152
LOG FastT RAID5	73.40	9	661	9	661
OS SCSI 36GB	36.40	1	36	1	36
Total Capacity					61,849

5 Clause 5: Performance Metrics and Response Time Related Items

5.1. Response Times

Ninetieth percentile, maximum and average response times must be reported for all transaction types as well as for the Menu response time.

Table 5-1 lists the response times and the ninetieth percentiles for each of the transaction types for the measured system.

5.2. Keying and Think Times

The minimum, the average, and the maximum keying and think times must be reported for each transaction type.

Table 5-1 lists the TPC-C keying and think times for the measured system.

Response Times	New Order	Payment	Order Status	Delivery (int./def.)	Stock Level	Menus
90 %	1.34	1.36	1.14	0.48/0.38	1.76	0.63
Average	0.70	0.68	0.65	0.21/0.22	1.16	0.23
Maximum	11.29	11.16	10.97	9.89/1.19	12.0	9.89
Think Times						
Minimum	0	0	0	0	0	N/A
Average	12.04	12.04	10.04	5.04	5.04	N/A
Maximum	120.31	120.33	100.31	50.31	50.31	N/A
Keying Times						
Minimum	18.00	3.00	2.00	2.00	2.00	N/A
Average	18.00	3.00	2.00	2.00	2.00	N/A
Maximum	18.02	3.02	2.02	2.02	2.02	N/A

Table 5-1: Think and Keying Times

5.3. Response Time Frequency Distribution

Response time frequency distribution curves must be reported for each transaction type.

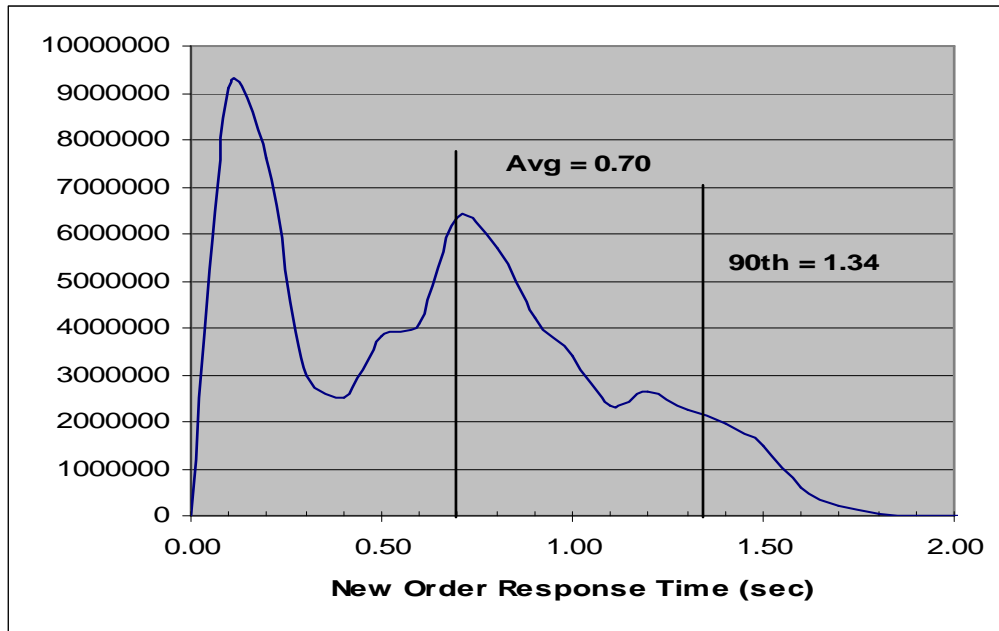


Figure 5-1: New-Order Response Time Distribution

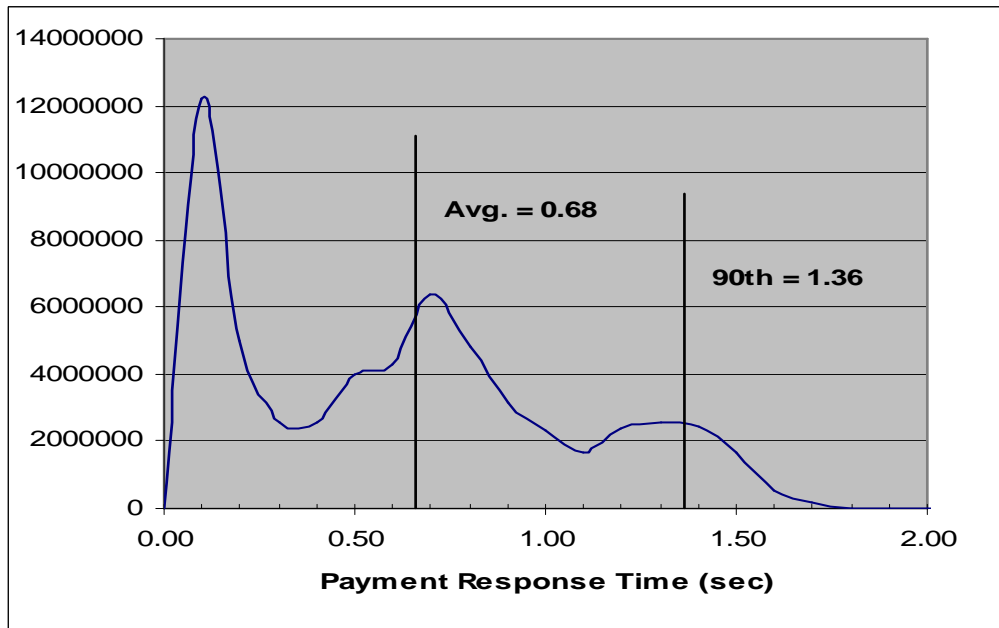


Figure 5-2: Payment Response Time Distribution

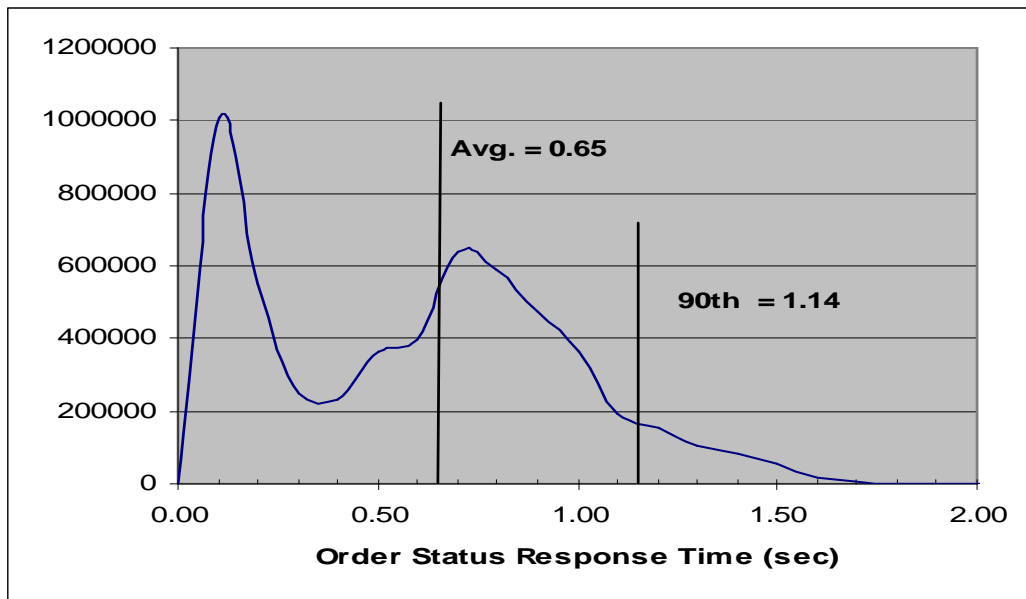


Figure 5-3: Order-Status Response Time Distribution

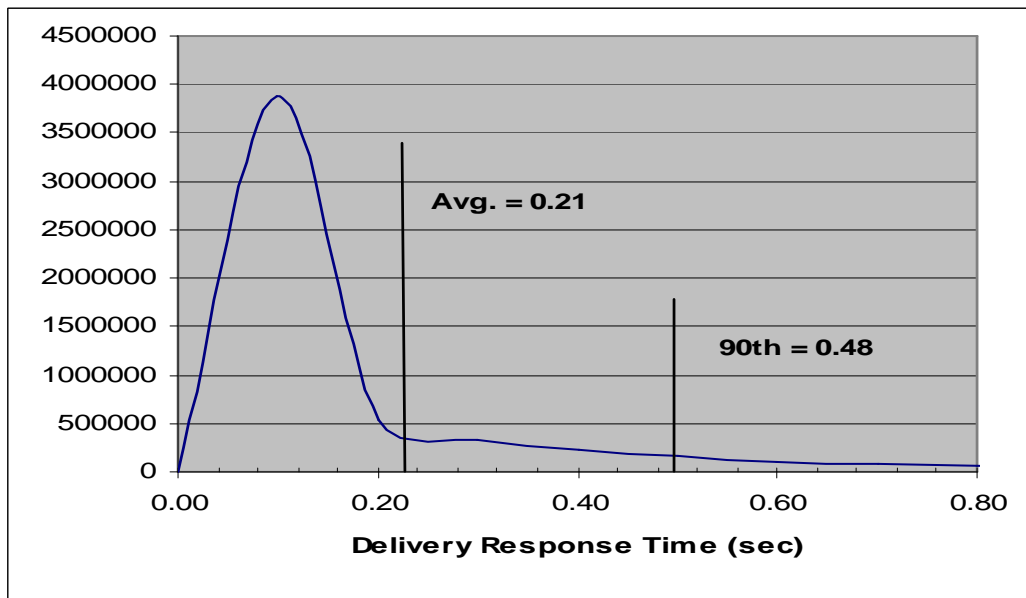


Figure 5-4: Delivery (Interactive) Response Time Distribution

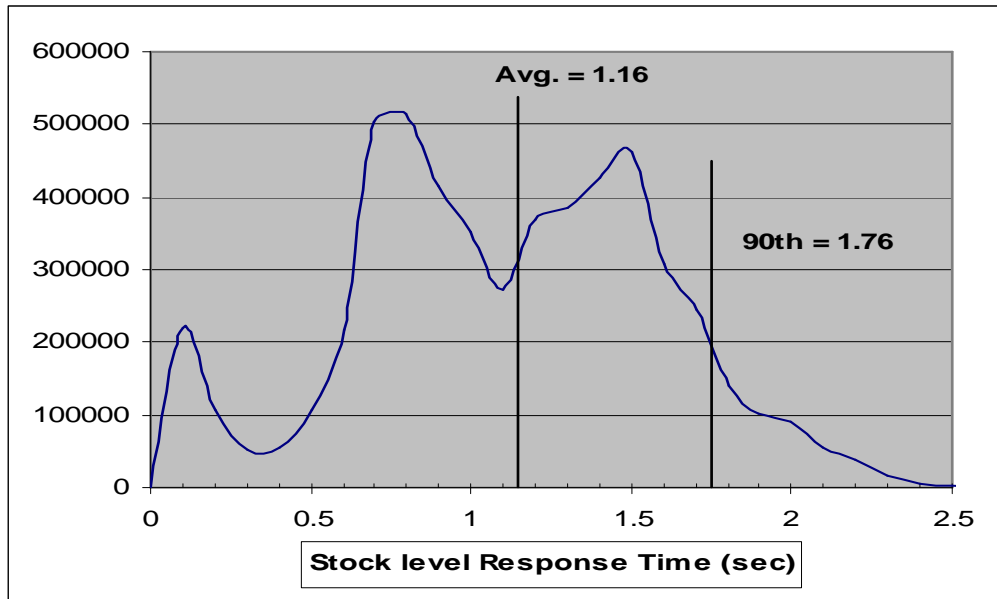


Figure 5-5: Stock Level Response Time Distribution

5.4. Performance Curve for Response Time versus Throughput

The performance curve for response times versus throughput must be reported for the New-Order transaction.

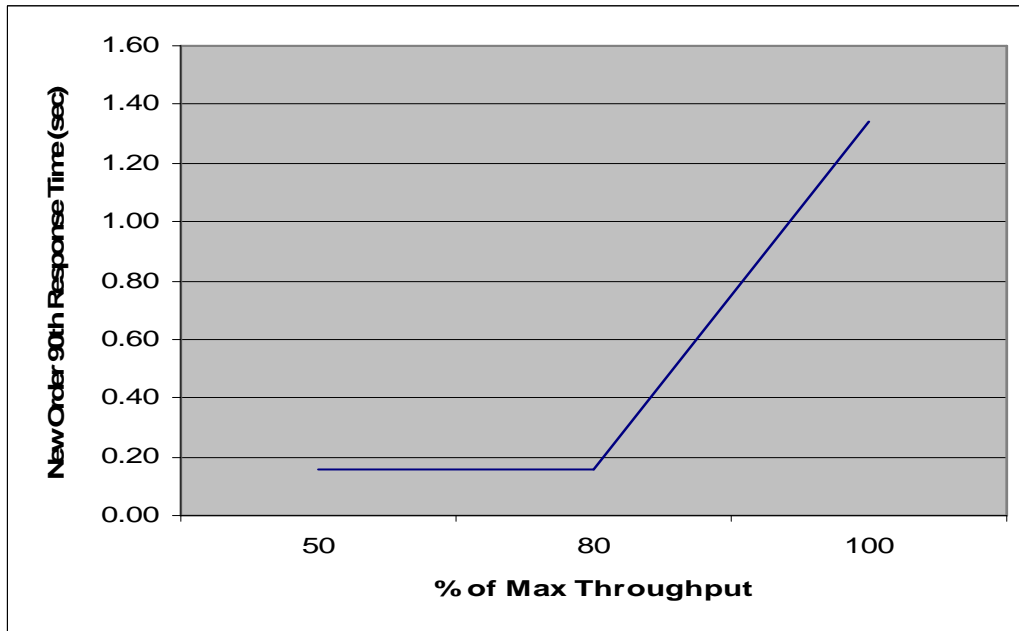


Figure 5-6: New-Order Response Time vs. Throughput

5.5. Think Time Frequency Distribution

A graph of the think time frequency distribution must be reported for the New-Order transaction.

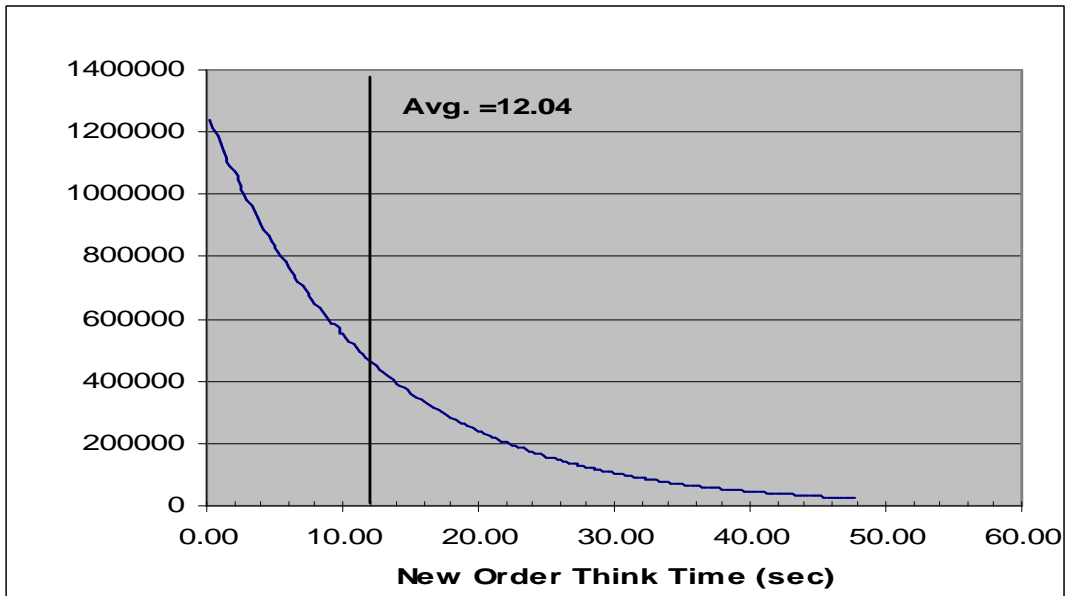


Figure 5-7: New-Order Think Time Distribution

5.6. Throughput versus Elapsed Time

A graph of throughput versus elapsed time must be reported for the New-Order transaction.

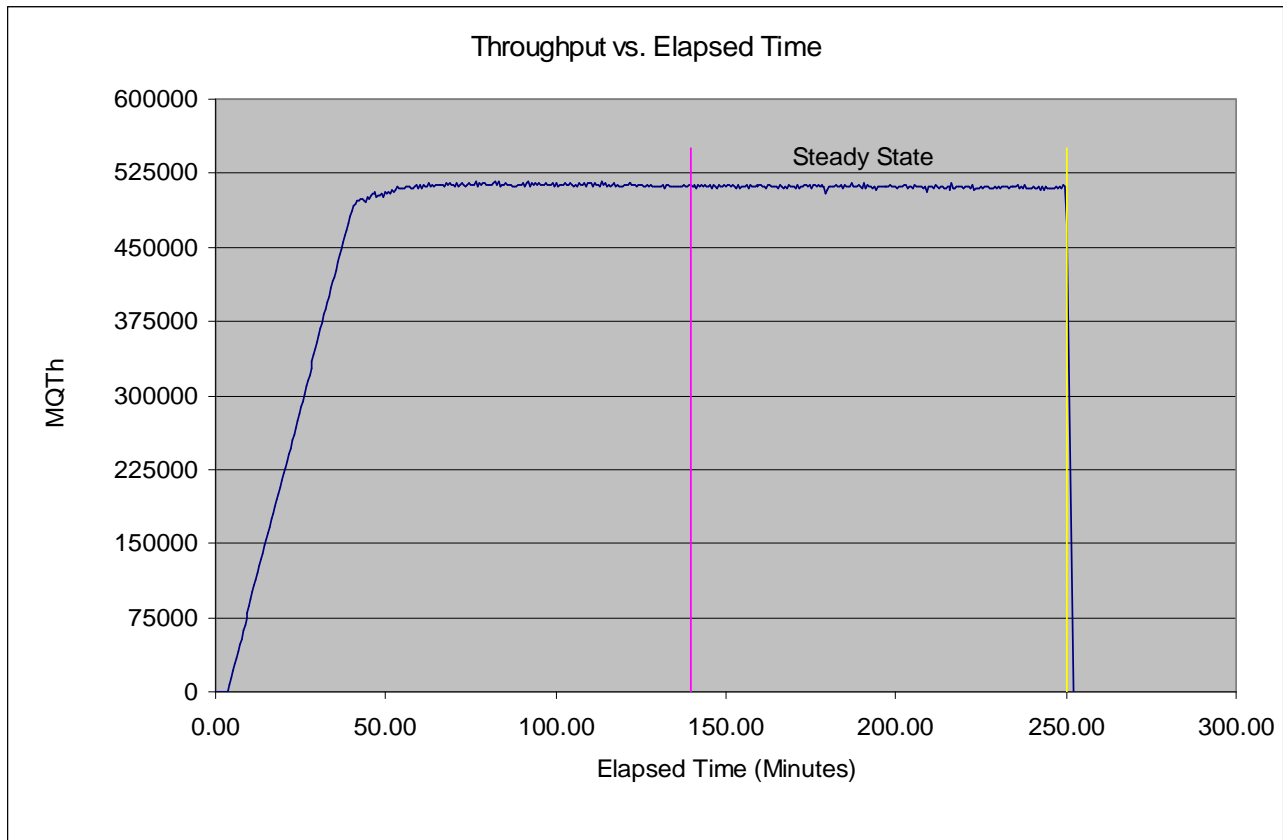


Figure 5-8: New-Order Throughput vs. Elapsed Time

5.7. Steady State Determination

The method used to determine that the SUT had reached a steady state prior to commencing the measurement interval must be described.

All the emulated users were allowed to logon and do transactions. The user ramp-up phase is clearly visible on the graph above. Refer to the Numerical Quantities Summary pages for the rampup time. Figure 5-8 New-Order throughput versus Elapsed Time graph shows that the system maintained a steady state during the measurement interval

5.8. Work Performed During Steady State

A description of how the work normally performed during a sustained test (for example check pointing, writing redo/undo log records, etc), actually occurred during the measurement interval must be reported.

A 2-hour measurement interval was used to guarantee that all work normally performed during an 8-hour sustained test is included in the reported throughput.

5.8.1. Transaction Flow

Each of the 4 (non-delivery) transactions is serviced by 2 individual programs, Internet Information System 6.0 (IIS) and a Microsoft COM+ 1.0 Queued Component Server, used as the transaction manager (COM+). Both programs are running on the client system:

- The initial HTML 1.0 request is serviced by an ISAPI custom-written handler running on Internet Information System 6.0. IIS is responsible for handling all HTML requests. The web server communicates to the COM+ server through a Microsoft COM+ API interface.
- COM+ communicates with the server system over Ethernet and handles all database operations, using DB2 embedded SQL calls.

When the COM+ server boots up, it creates a configurable amount of connections to the server (listed in application settings).

COM+ routes the transaction and balances the load according to the options defined in the Component Services GUI for the COM+ server application and settings in the Windows 2003 registry. The configuration file and registry variables are listed in Appendix B.2.

At the beginning, each TPC-C user sends a pair of HTML 1.0 requests submitting its unique warehouse and district to the IIS ISAPI handler. Upon successful validation of user's login, IIS displays an HTML form which encapsulates the TPC-C transaction menu.

The transaction flow is described below:

- The TPC-C user requests the transaction type's HTML form and proceeds to generate (fill in) a GET request with the required files for the transaction.
- IIS accepts the filled in GET request, parses, and validates all values entered by the user.
- It then proceeds to transmit those values to the COM+ server through an transaction type specific COM+ api interface.
- The COM+ Pool Manager receives the request and first decides if there is a connection object in the pool available to service it.
 - If so, the connection is used to send the transaction request to the Server.
 - If no connection is available, the request will enter a COM+ internal queue and will be serviced by the next available connection.
- Once the connection is available to be used, a COM+ pool thread receives the transaction and calls a TPC-C back end DB2 client api to execute all database operations related to the transaction type. (All the transaction information entered on the HTML form is available in a data structure provided by the ISAPI caller).
- The transaction is committed and the DB2 back end client returns control back to the COM pool thread.
- COM pool thread returns control to the ISAPI caller.
 - (All transaction results are inside the data structure that the ISAPI caller provided to the COM+ api in the parameter list).
- ISAPI caller returns control to the "screen application" by doing a PUT request.

5.8.2. Database Transaction

All database operations are performed by the TPC-C back-end programs. The process is described below:

Using embedded SQL calls, the TPC-C back-end program interacts with DB2 Server to perform SQL data manipulations such as update, select, delete and insert, as required by the transaction. After all database operations are performed for a transaction, the transaction is committed.

DB2 Server proceeds to update the database as follows:

When DB2 Server changes a database table with an update, insert, or delete operation, the change is initially made in memory, not on disk. When there is not enough space in the memory buffer to read in or write additional data pages, DB2 Server will make space by flushing some modified pages to disk. Modified pages are also written to disk as part of the "Soft" checkpoint to ensure that no updates remain unflushed for longer than the allowed time. Before a change is made to the database, it is first recorded in the transaction log. This ensures that the database can be recovered completely in the event of a failure. Using the transaction log, transactions that started but did not complete prior to a failure can be undone, and transactions recorded as complete in the transaction log but not yet written to disk can be redone.

5.8.3. Checkpoints

DB2 uses a write-ahead-logging protocol to guarantee recovery. This protocol uses "Soft" checkpoint to write least-recently-used database pages to disk independent of transaction commit. However, enough log information to redo/undo the change to a database pages is committed to disk before the database page itself is written. This protocol therefore renders checkpoint unnecessary for DB2. For a more detailed description of the general principles of the write-ahead-logging protocol, see the IBM research paper, "ARIES: A Transaction Recovery Method Supporting Fine Granularity

Locking and Partial Rollbacks Using Write-Ahead Logging,” by C. Mohan, Database Technology Institute, IBM Almaden Research Center.
([http:// portal.acm.org/citation.cfm?id=128770&coll=portal&dl=ACM&CFID=10343790&CFTOKEN=42047146](http://portal.acm.org/citation.cfm?id=128770&coll=portal&dl=ACM&CFID=10343790&CFTOKEN=42047146))

5.9. Measurement Interval

A statement of the duration of the measurement interval for the reported Maximum Qualified Throughput (tpmC) must be included.

A 2-hour measurement interval was used. No connections were lost during the run.

6 Clause 6: SUT, Driver, and Communication Definition Related Items

6.1. RTE Availability

If the RTE is commercially available, then its inputs must be specified. Otherwise, a description must be supplied of what inputs to the RTE had been used.

IBM used an internally developed RTE for these tests. 41,600 warehouses were configured. A rampup time of one hour twenty six minutes was specified, along with a run time of two hours.

6.2. Functionality and Performance of Emulated Components

It must be demonstrated that the functionality and performance of the components being emulated in the Driver System are equivalent to that of the priced system.

No components were emulated.

6.3. Network Bandwidth

The bandwidth of the network(s) used in the tested/priced configuration must be disclosed.

The network between the clients and the database server was configured as 1000 MegaBits per second Full Duplex.

6.4. Operator Intervention

If the configuration requires operator intervention, the mechanism and the frequency of this intervention must be disclosed.

No operator intervention is required to sustain the reported throughput during the eight-hour period.

7 Clause 7: Pricing Related Items

7.1. Hardware and Programs Used

A detailed list of the hardware and software used in the priced system must be reported. Each item must have vendor part number, description, and release/revision level, and either general availability status or committed delivery date. If package-pricing is used, contents of the package must be disclosed. Pricing source(s) and effective date(s) must also be reported.

The detailed list of all hardware and programs for the priced configuration is listed in the pricing sheets for each system reported. The prices for all products and features that are provided by IBM are available the same day as product or feature availability.

7.2. Three Year Cost of System Configuration

The total 3-year price of the entire configuration must be reported, including: hardware, software, and maintenance charges. Separate component pricing is recommended. The basis of all discounts used must be disclosed.

The pricing details for this disclosure is contained in the executive summary pages. All 3rd party quotations are included at the end of this report in Appendix D. All prices are based on IBM US list prices.

Discount are based on US list prices and for similar quantities and configurations. A discount of 31.72% has been applied to specified IBM hardware, and services based on the total value and quantities of the components of the configuration.

7.3. Availability Dates

The committed delivery date for general availability (availability date) of products used in the price calculations must be reported. When the priced system includes products with different availability dates, the reported availability date for the priced system must be the date at which all components are committed to be available.

All components of the SUT will be available on March 26, 2007.

7.4. Statement of tpmC and Price/Performance

A statement of the measured tpmC, as well as the respective calculations for 3-year pricing, price/performance (price/tpmC), and the availability date must be disclosed.

System	tpmC	3-year System Cost	\$/tpmC	Availability Date
IBM System x3950	511,342	\$2,784,599 USD	\$5.45 USD	March 26, 2007

Please refer to the price list on the Executive Summary page for details.

8 Clause 9: Audit Related Items

If the benchmark has been independently audited, then the auditor's name, address, phone number, and a brief audit summary report indicating compliance must be included in the Full Disclosure Report. A statement should be included, specifying when the complete audit report will become available and who to contact in order to obtain a copy.

The auditor's attestation letter is included in this section of this report:



Raymond J. Venditti IBM Linux Performance 11501 Burnet Road Austin, TX 78758	Berni Schiefer IBM DB2 Performance 8200 Warden Avenue Markham, Ontario L6G1C7
---	--

March 16, 2007

I verified the TPC Benchmark™ C performance of the following Client Server configuration:

Platform:	IBM System x3950 c/s
Operating system:	SUSE Linux Enterprise Server 10 for Intel EM64T
Database Manager:	IBM DB2 9
Transaction Manager:	Microsoft COM+

The results were:

CPU's Speed	Memory	Disks	NewOrder 90% Response Time	tpmC
Server: IBM System x3950				
8 x Intel Xeon 7150N (3.5GHz)	128 GB (16 MB L3 cache/cpu)	1680 x 36.4 GB FC (ext.) 9 x 73.4 GB SAS (ext.) 1 x 36 GB SAS (int.)	1.34 Seconds	511,342.4
Sixteen Clients: IBM System x3500 (each with)				
2 x Intel Xeon 5160 DualCore (3.0 GHz)	2 GB main (2 MB L2 cache/cpu)	1 x 36 GB	n/a	n/a

In my opinion, these performance results were produced in compliance with the TPC requirements for the benchmark.

The following verification items were given special attention:

- The transactions were correctly implemented
- The database records were the proper size
- The database was properly scaled and populated
- The ACID properties were met
- Input data was generated according to the specified percentages
- The transaction cycle times included the required keying and think times
- The reported response times were correctly measured.
- At least 90% of all delivery transactions met the 80 Second completion time limit
- All 90% response times were under the specified maximums
- The measurement interval was representative of steady state conditions
- The reported measurement interval was 120 minutes
- **Write-ahead-logging** was active during the measurement interval
- The 60 day storage requirement was correctly computed
- The system pricing was verified for major components and maintenance

Additional Audit Notes:

The measured configuration included fifteen IBM x335 client systems and one IBM x3500 client system. The IBM x335 systems were substituted, one for one, with IBM x3500 systems in the priced configuration. The TPC requirements for substitution of priced clients were verified and met.

Respectfully Yours,



François Raab, President

9 Appendix A: Client Server Code

9.1. Client/Terminal Handler Code

Makefile.config

```
#####  
#####  
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## US Government Users Restricted Rights - Use, duplication or  
## disclosure restricted by GSA ADP Schedule Contract with IBM Corp.  
#####  
#####  
#  
# Makefile.config - NT/Win2000 Makefile Configuration  
#  
# Make Configuration (MSVC)  
MAKE=nmake.exe  
# Compiler Configuration (MSVC).  
# CFLAGS_DEBUG may be set to "-Zi -Od", "-DDEBUGIT" "-Zi -Od -DDEBUGIT" or left  
# blank  
CC=cl.exe  
CFLAGS_OS=-DSQLWINT -MT -DWIN32 -J -Zp8 -DREG_KIT_METHOD  
CFLAGS_OUT=/Fo  
CFLAGS_DEBUG=  
# Linker Configuration (MSVC)  
LD_EXEC=link.exe  
LD_STORP=link.exe  
LDFLAGS_EXEC=  
LDFLAGS_SHLIB=/DLL  
LDFLAGS_STORP=$(LDFLAGS_SHLIB) /DEF:rpctpc.def  
LDFLAGS_LIB=/LIBPATH:$(TPCC_SQLLIB)/lib /LIBPATH:"C:\Program Files\Microsoft  
Visual Studio\VC98\lib" db2api.lib winmm.lib  
LDFLAGS_OUT=/OUT:  
# Library Configuration  
AR=lib.exe  
ARFLAGS=  
ARFLAGS_LIB=  
ARFLAGS_OUT=/OUT:  
# OS Commands  
ERASE=del /F  
ERASEDIR=rmdir /S  
MOVE=MOVE  
COPY=COPY  
# OS File Extensions & Path Separator  
OBJEXT=.obj
```

```
LIBEXT=.lib  
SHLIBEXT=.dll  
BINEXT=.exe  
SLASH=\\  
CMDSEP=&
```

Src.Cli/Makefile

```
#####  
#####  
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## (C) COPYRIGHT International Business Machines Corp. 1996 - 2006  
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## disclosure restricted by GSA ADP Schedule Contract with IBM Corp.  
# =====  
#  
# Makefile - Makefile for Src.Cli (RTE/Driver Interface)  
#  
include $(TPCC_ROOT)/Makefile.config  
#  
#####  
# Preprocessor Compiler and Linker Flags  
#  
#####  
BND_OPTS = GRANT PUBLIC \  
MESSAGES $*.bnd.msg  
PRP_OPTS = BINDFILE \  
ISOLATION RR \  
EXPLAIN ALL \  
MESSAGES $*.prep.msg \  
LEVEL $(TPCC_VERSION) \  
NOLINEMACRO  
INCLUDES = -I$(TPCC_SQLLIB)/include -I$(TPCC_ROOT)/include  
CFLAGS = $(CFLAGS_OS) $(INCLUDES) $(CFLAGS_DEBUG) \  
$(UOPTS) -D$(DB2EDITION) -D$(DB2VERSION) -D$(TPCC_SPTYPE)  
OBJS = $(TPCC_ROOT)/Src.Common/tpccdbg$(OBJEXT) \  
$(TPCC_ROOT)/Src.Common/tpccctx$(OBJEXT) \  
tpcccli$(OBJEXT)  
LIBS = tpcccli$(LIBEXT)  
#  
#####  
# User Targets  
#  
#####  
all: connect $(OBJS) plan $(LIBS) disconnect  
$(AR) $(ARFLAGS) $(ARFLAGS_OUT)tpcccli$(LIBEXT) $(OBJS) $(ARFLAGS_LIB)
```

```
@echo "-----"  
@echo "Please copy lval.h, db2tpcc.h, and tpcccli$(LIBEXT) to"  
@echo "a place where they can be #included and linked with the"  
@echo "RTE/driver code."  
@echo "-----"
```

```
clean:  
- $(ERASE) *.msg *.bnd *.plan *$(OBJEXT) *$(LIBEXT) tpcccli.c  
#  
#####  
# Helper Targets  
#  
#####  
connect:  
- db2 connect to $(TPCC_DBNAME)  
disconnect:  
- db2 connect reset  
- db2 terminate  
plan:  
- db2exfmt -d $(TPCC_DBNAME) -e $(TPCC_SCHEMA) -s $(TPCC_SCHEMA) -w -1 -n  
TPCCCLI -g -# 0 -o TPCCCLI.exfmt.plan  
- db2expln -d $(TPCC_DBNAME) -c $(TPCC_SCHEMA) -p TPCCCLI -s 0 -g -o  
TPCCCLI.expln.plan  
rebind: connect  
db2 bind tpcccli.bnd $(BND_OPTS) QUERYOPT 7  
#  
#####  
# Build Rules  
#  
#####  
.SUFFIXES:  
.SUFFIXES: $(OBJEXT) .c .sqc  
tpcccli.c:  
@echo "Prepping $*.sqc"  
-db2 prep $*.sqc $(PRP_OPTS) ISOLATION RR  
@echo "Binding $*.bnd"  
db2 bind $*.bnd $(BND_OPTS) QUERYOPT 7  
#  
#####  
# Dependencies  
#  
#####  
# Client Library:  
tpcccli$(LIBEXT): $(OBJS)  
# Source  
tpcccli$(OBJEXT): tpcccli.c  
# Headers  
tpcccli.c: $(TPCC_ROOT)/include/db2tpcc.h $(TPCC_ROOT)/include/lval.h
```

Src.Cli/tpcccli.sqc

```

/*****
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** disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
*****/

/*
 * tpcccli.sqc - Client/Server code for TPCC
 */

#include <stdlib.h>
#include <errno.h>
#include "db2tpcc.h"
#include "tpccapp.h"
#include "tpccdbg.h"

#include "sqlca.h"
#include "sql.h"

// -----
// New Order CLIENT
// -----

static int itemComparison ( const void * a , const void * b )
{
    struct in_items_struct * one = (struct in_items_struct *) a ;
    struct in_items_struct * two = (struct in_items_struct *) b ;

    if ( one->s_OL_I_ID != two->s_OL_I_ID )
    {
        return ( one->s_OL_I_ID - two->s_OL_I_ID ) ;
    }
    else
    {
        return ( one->s_OL_SUPPLY_W_ID - two->s_OL_SUPPLY_W_ID ) ;
    }
}

int neword_sql ( struct in_neword_struct * in_neword
                , struct out_neword_struct * neword )
{
    struct sqlca sqlca ;

    EXEC SQL BEGIN DECLARE SECTION;

    struct vc_new_in
    {
        short len;
        char data[ 262 ] ;
    } *pHostvarInput ;

    struct vc_new_out
    {
        short len;
        char data[ 682 ] ;
    } *pHostvarOutput ;

    EXEC SQL END DECLARE SECTION;

    int clientRc = TRAN_OK ;

    int itemIdx = 0 ;

```

```

    in_neword->s_all_local = 1 ;

    for ( itemIdx = 0 ;
          itemIdx < 15 && in_neword->in_item[ itemIdx ].s_OL_I_ID !=
UNUSED_ITEM_ID ;
          itemIdx++
        )
    {
        if ( in_neword->in_item[ itemIdx ].s_OL_SUPPLY_W_ID != in_neword->s_W_ID )
        {
            in_neword->s_all_local = 0 ;
        }
    }

    in_neword->s_O_OL_CNT = itemIdx ;

    qsort( in_neword->in_item, in_neword->s_O_OL_CNT
          , sizeof ( in_neword->in_item[ 0 ] )
          , itemComparison
          ) ;

    pHostvarInput = (struct vc_new_in *) in_neword ;
    pHostvarInput->len = sizeof(struct in_neword_struct) - SPGENERAL_ADJUST ;

    pHostvarOutput = (struct vc_new_out *) neword ;
    pHostvarOutput->len = sizeof(struct out_neword_struct) - SPGENERAL_ADJUST ;

#ifdef DEBUGIT
    new_debug(neword, in_neword, "Client before SP call");
#endif /* DEBUGIT */

#ifdef SWAP_ENDIAN
    for (itemIdx=0; itemIdx<in_neword->s_O_OL_CNT; itemIdx++)
    {
        SWAP_BYTE(in_neword->in_item[ itemIdx ].s_OL_I_ID);
        SWAP_BYTE(in_neword->in_item[ itemIdx ].s_OL_SUPPLY_W_ID);
        SWAP_BYTE(in_neword->in_item[ itemIdx ].s_OL_QUANTITY);
    }
    SWAP_BYTE(in_neword->s_C_ID);
    SWAP_BYTE(in_neword->s_W_ID);
    SWAP_BYTE(in_neword->s_D_ID);
    SWAP_BYTE(in_neword->s_O_OL_CNT);
    SWAP_BYTE(in_neword->s_all_local);
    SWAP_BYTE(in_neword->duplicate_items);
#endif //SWAP_ENDIAN

    EXEC SQL CALL news ( :*pHostvarInput, :*pHostvarOutput );

#ifdef SWAP_ENDIAN
    SWAP_BYTE(in_neword->s_C_ID);
    SWAP_BYTE(in_neword->s_W_ID);
    SWAP_BYTE(in_neword->s_D_ID);
    SWAP_BYTE(in_neword->s_O_OL_CNT);
    SWAP_BYTE(in_neword->s_all_local);
    SWAP_BYTE(in_neword->duplicate_items);
    for (itemIdx=0; itemIdx<in_neword->s_O_OL_CNT; itemIdx++)
    {
        SWAP_BYTE(in_neword->in_item[ itemIdx ].s_OL_I_ID);
        SWAP_BYTE(in_neword->in_item[ itemIdx ].s_OL_SUPPLY_W_ID);
        SWAP_BYTE(in_neword->in_item[ itemIdx ].s_OL_QUANTITY);
    }

    SWAP_BYTE(neword->s_W_TAX);
    SWAP_BYTE(neword->s_D_TAX);
    SWAP_BYTE(neword->s_C_DISCOUNT);
    SWAP_BYTE(neword->s_total_amount);
    SWAP_BYTE(neword->s_O_ID);
    SWAP_BYTE(neword->s_O_OL_CNT);
    SWAP_BYTE(neword->s_transtatus);

```

```

    SWAP_BYTE(neword->deadlocks);
    for (itemIdx=0; itemIdx<in_neword->s_O_OL_CNT; itemIdx++)
    {
        SWAP_BYTE(neword->item[ itemIdx ].s_I_PRICE);
        SWAP_BYTE(neword->item[ itemIdx ].s_OL_AMOUNT);
        SWAP_BYTE(neword->item[ itemIdx ].s_S_QUANTITY);
    }
#endif //SWAP_ENDIAN

    if ( sqlca.sqlcode == 0 )
    {
        float wtax = neword->s_W_TAX ;
        float dtax = neword->s_D_TAX ;
        float cdisc = neword->s_C_DISCOUNT ;
        float factor = (1.0 - cdisc) * (1.0 + wtax + dtax) ;

        // Compute order total

        neword->s_total_amount = 0 ;

        for ( itemIdx = 0 ;
              itemIdx < in_neword->s_O_OL_CNT ; // from input , not output
              itemIdx++
            )
        {
            if ( neword->item[ itemIdx ].s_I_PRICE > 0 ) // A zero price signifies a bad item
            {
                neword->item[ itemIdx ].s_OL_AMOUNT = neword-
>item[ itemIdx ].s_I_PRICE *
                in_neword->in_item[ itemIdx ].s_OL_QUANTITY ; //
reference input value

                neword->s_total_amount += neword->item[ itemIdx ].s_OL_AMOUNT ;
            }
        }

        neword->s_total_amount *= factor;
    }
    else
    {
        sqlerror( NEWORD_SQL, "NEW", __FILE__, __LINE__, &sqlca) ;
        neword->s_transtatus = FATAL_SQLERROR ;
        clientRc = FATAL_SQLERROR ;
    }

#ifdef DEBUGIT
    new_debug(neword, in_neword, "Client after SP call");
#endif /* DEBUGIT */

    if (neword->s_transtatus <= FATAL_SQLERROR)
    {
        new_debug(neword, in_neword, "NEW failed");
        clientRc = FATAL_SQLERROR ;
    }

    if (neword->s_transtatus == INVALID_ITEM)
    {
        clientRc = INVALID_ITEM ;
    }

    return ( clientRc ) ;
}

// -----
// Payment CLIENT
// -----

int payment_sql ( struct in_payment_struct * in_payment
                , struct out_payment_struct * payment )

```



```

{
struct sqlca sqlca ;

int clientRc = TRAN_OK ;

EXEC SQL BEGIN DECLARE SECTION;

// Inputs

float h_amount ;
sqlint32 in_c_id ;

struct s_data_type { short len ; char data[ 16 ] ; } c_last_input ;

sqlint32 w_id ;
sqlint32 c_w_id ;
short d_id ;
short c_d_id ;

// Outputs

sqlint32 c_id ;

double c_credit_lim ;
float c_discount ;
double c_balance ;

char w_street_1 [ 20 ], w_street_2 [ 20 ] ;
char w_city [ 20 ], w_state [ 2 ], w_zip [ 9 ] ;

char d_street_1 [ 20 ], d_street_2 [ 20 ], d_city [ 20 ] ;
char d_state [ 2 ], d_zip [ 9 ], c_first [ 16 ] ;

char c_last [ 16 ] ;

char c_middle [ 2 ], c_street_1 [ 20 ] ;
char c_street_2 [ 20 ], c_city [ 20 ], c_state [ 2 ] ;
char c_zip [ 9 ], c_phone [ 16 ] ;

char c_credit [ 2 ] ;

char c_since [ 27 ] ;

char c_data [ 200 ] ;
short c_data_indicator = 0 ;

char h_date [ 27 ] ;

struct c_data_prefix_c_last_type { short len ; char data[ 28 ] ; } c_data_prefix_c_last ;
struct c_data_prefix_c_id_type { short len ; char data[ 34 ] ; } c_data_prefix_c_id ;

EXEC SQL END DECLARE SECTION;

// Input redirects

#define h_amount in_payment->s_H_AMOUNT
#define in_c_id in_payment->s_C_ID

#define w_id in_payment->s_W_ID
#define d_id in_payment->s_D_ID

#define c_d_id in_payment->s_C_D_ID
#define c_w_id in_payment->s_C_W_ID

// Output redirects

#define c_credit_lim payment->s_C_CREDIT_LIM
#define c_discount payment->s_C_DISCOUNT

```

```

#define c_balance payment->s_C_BALANCE

#define c_id payment->s_C_ID
#define c_last payment->s_C_LAST

#define c_first payment->s_C_FIRST
#define c_middle payment->s_C_MIDDLE
#define c_street_1 payment->s_C_STREET_1
#define c_street_2 payment->s_C_STREET_2
#define c_city payment->s_C_CITY
#define c_state payment->s_C_STATE
#define c_zip payment->s_C_ZIP
#define c_phone payment->s_C_PHONE
#define c_credit payment->s_C_CREDIT
#define c_since payment->s_C_SINCE_time
#define c_data payment->s_C_DATA

#define w_street_1 payment->s_W_STREET_1
#define w_street_2 payment->s_W_STREET_2
#define w_city payment->s_W_CITY
#define w_state payment->s_W_STATE
#define w_zip payment->s_W_ZIP

#define d_street_1 payment->s_D_STREET_1
#define d_street_2 payment->s_D_STREET_2
#define d_city payment->s_D_CITY
#define d_state payment->s_D_STATE
#define d_zip payment->s_D_ZIP

#define h_date payment->s_H_DATE_time

payment->deadlocks = -1 ;
payment->s_transtatus = TRAN_OK ;

if ( c_w_id == 0 ) { c_w_id = w_id ; }
if ( c_d_id == 0 ) { c_d_id = d_id ; }

#ifdef DEBUGIT
pay_debug(payment, in_payment, "Client before SQL call");
#endif /* DEBUGIT */

// Create c_data_prefix strings and copy some elements from
// in -> out struct outside of retry_tran loop

if ( in_c_id == 0 )
{
c_data_prefix_c_last.len = sprintf( c_data_prefix_c_last.data, " %2.2d %6.6d %2.2d
%6.6d %06.2f", c_d_id, c_w_id, d_id, w_id, h_amount ) ;

// Setup the input c_last varchar
c_last_input.len = strlen( in_payment->s_C_LAST ) ;
memcpy( c_last_input.data, in_payment->s_C_LAST, c_last_input.len ) ;

// Copy to the output structure
memcpy( payment->s_C_LAST, in_payment->s_C_LAST, sizeof( payment-
>s_C_LAST ) ) ;
} else {

// Copy c_id to the output structure
c_id = in_c_id ;

c_data_prefix_c_id.len = sprintf( c_data_prefix_c_id.data, " %5.5d %2.2d %6.6d %2.2d
%6.6d %06.2f", c_id, c_d_id, c_w_id, d_id, w_id, h_amount ) ;
}

retry_tran:

```

```

payment->deadlocks ++ ;

if ( in_c_id == 0 )
{
EXEC SQL BEGIN COMPOUND NOT ATOMIC STATIC

SELECT W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP
, D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP
, C_ID, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
, C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT,
C_CREDIT_LIM
, C_DISCOUNT, C_BALANCE, C_DATA, H_DATE

INTO :w_street_1, :w_street_2, :w_city, :w_state, :w_zip
, :d_street_1, :d_street_2, :d_city, :d_state, :d_zip
, :c_id, :c_first, :c_middle, :c_street_1, :c_street_2, :c_city, :c_state
, :c_zip, :c_phone, :c_since, :c_credit, :c_credit_lim
, :c_discount, :c_balance, :c_data :c_data_indicator, :h_date
FROM TABLE ( PAY_C_LAST( :w_id
, :d_id
, :c_w_id
, :c_d_id
, :c_last_input
, CAST(:h_amount AS DECIMAL(6,2))
, :c_data_prefix_c_last
)

) AS T ( W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP
, D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP
, C_ID, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
, C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT,
C_CREDIT_LIM
, C_DISCOUNT, C_BALANCE, C_DATA, H_DATE
)
;

COMMIT ;

END COMPOUND ;
}
else
{
EXEC SQL BEGIN COMPOUND NOT ATOMIC STATIC

SELECT W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP
, D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP
, C_LAST, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
, C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT,
C_CREDIT_LIM
, C_DISCOUNT, C_BALANCE, C_DATA, H_DATE

INTO :w_street_1, :w_street_2, :w_city, :w_state, :w_zip
, :d_street_1, :d_street_2, :d_city, :d_state, :d_zip
, :c_last, :c_first, :c_middle, :c_street_1, :c_street_2, :c_city, :c_state
, :c_zip, :c_phone, :c_since, :c_credit, :c_credit_lim
, :c_discount, :c_balance, :c_data :c_data_indicator, :h_date
FROM TABLE ( PAY_C_ID( :w_id
, :d_id
, :c_w_id
, :c_d_id
, :in_c_id
, CAST(:h_amount AS DECIMAL(6,2))
, :c_data_prefix_c_id
)

) AS T( W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP
, D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP
, C_LAST, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2

```

```

        , C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT,
C_CREDIT_LIM
    )
    , C_DISCOUNT, C_BALANCE, C_DATA, H_DATE
;

    COMMIT ;

    END COMPOUND ;

}

#ifdef DEBUGIT
    pay_debug(payment, in_payment, "Client after SQL call");
#endif /* DEBUGIT */

if ( sqlca.sqlcode != 0 )
{
    DLCHK( retry_tran );

    sqlerror( PAYMENT_SQL, "PAY", __FILE__, __LINE__, &sqlca );
    payment->s_transtatus = FATAL_SQLERROR ;
    clientRc = FATAL_SQLERROR ;

    pay_debug( payment, in_payment, "PAY failed" );

    EXEC SQL ROLLBACK WORK ;

    if ( sqlca.sqlcode != 0 )
    {
        sqlerror( PAYMENT_SQL, "ROLLBACK FAILED", __FILE__, __LINE__, &sqlca );
    }
}

return ( clientRc );
}

// -----
// Order Status CLIENT
// -----

int ordstat_sql ( struct in_ordstat_struct * in_ordstat
                , struct out_ordstat_struct * ordstat )
{
    struct sqlca sqlca ;

    EXEC SQL BEGIN DECLARE SECTION;

    struct vc_ord_in
    {
        short len ;
        char data[ 42 ] ;
    } * in_ord ;

    struct vc_ord_out
    {
        short len ;
        char data[ 822 ] ;
    } * out_ord ;

    EXEC SQL END DECLARE SECTION;

    int clientRc = TRAN_OK ;
    int itemIndex = 0 ;

    in_ord = (struct vc_ord_in *) in_ordstat ;
    in_ord->len = sizeof(struct in_ordstat_struct) - SPGENERAL_ADJUST ;

    out_ord = (struct vc_ord_out *) ordstat ;
    out_ord->len = sizeof(struct out_ordstat_struct) - SPGENERAL_ADJUST ;

```

```

#ifdef DEBUGIT
    ord_debug(ordstat, in_ordstat, "Client before SP call");
#endif /* DEBUGIT */

#ifdef SWAP_ENDIAN
    SWAP_BYTE(in_ordstat->s_C_ID);
    SWAP_BYTE(in_ordstat->s_W_ID);
    SWAP_BYTE(in_ordstat->s_D_ID);
#endif //SWAP_ENDIAN

    EXEC SQL CALL ords ( :*in_ord, :*out_ord ) ;

#ifdef SWAP_ENDIAN
    SWAP_BYTE(in_ordstat->s_C_ID);
    SWAP_BYTE(in_ordstat->s_W_ID);
    SWAP_BYTE(in_ordstat->s_D_ID);

    SWAP_BYTE(ordstat->s_C_BALANCE);
    SWAP_BYTE(ordstat->s_C_ID);
    SWAP_BYTE(ordstat->s_O_ID);
    SWAP_BYTE(ordstat->s_O_CARRIER_ID);
    SWAP_BYTE(ordstat->s_ol_cnt);
    SWAP_BYTE(ordstat->s_transtatus);
    SWAP_BYTE(ordstat->deadlocks);
    for (itemIndex=0; itemIndex<ordstat->s_ol_cnt; itemIndex++)
    {
        SWAP_BYTE(ordstat->item[ itemIndex ].s_OL_AMOUNT);
        SWAP_BYTE(ordstat->item[ itemIndex ].s_OL_I_ID);
        SWAP_BYTE(ordstat->item[ itemIndex ].s_OL_SUPPLY_W_ID);
        SWAP_BYTE(ordstat->item[ itemIndex ].s_OL_QUANTITY);
    }
#endif //SWAP_ENDIAN

    if ( sqlca.sqlcode == 0 )
    {
        // Propagate the field we already knew into the output structure
        // 60% of the time, we already new c_last (input c_id is 0)

        if ( in_ordstat->s_C_ID == 0 )
        {
            memcpy( ordstat->s_C_LAST , in_ordstat->s_C_LAST, sizeof( ordstat-
>s_C_LAST ) );
        }
        else
        {
            ordstat->s_C_ID = in_ordstat->s_C_ID ;
        }
    }
    else
    {
        sqlerror( ORDSTAT_SQL, "ORD", __FILE__, __LINE__, &sqlca );
        ordstat->s_transtatus = FATAL_SQLERROR ;
        clientRc = FATAL_SQLERROR ;
    }
}

#ifdef DEBUGIT
    ord_debug(ordstat, in_ordstat, "Client after SP call");
#endif /* DEBUGIT */

    if ( ordstat->s_transtatus <= FATAL_SQLERROR )
    {
        ord_debug(ordstat, in_ordstat, "ORD failed");
        clientRc = FATAL_SQLERROR ;
    }

    return ( clientRc );
}

// -----

```

```

// Delivery CLIENT
// -----

int delivery_sql ( struct in_delivery_struct * in_delivery
                , struct out_delivery_struct * delivery )
{
    struct sqlca sqlca ;

    EXEC SQL BEGIN DECLARE SECTION;

    struct vc_del_in
    {
        short len ;
        char data[ 14 ] ;
    } * in_del ;

    struct vc_del_out
    {
        short len;
        char data[ 50 ] ;
    } * out_del ;

    EXEC SQL END DECLARE SECTION;

    int clientRc = TRAN_OK ;
    int orderIndex = 0 ;

    in_del = (struct vc_del_in *) in_delivery ;
    in_del->len = sizeof(struct in_delivery_struct) - SPGENERAL_ADJUST;

    out_del = (struct vc_del_out *) delivery ;
    out_del->len = sizeof(struct out_delivery_struct) - SPGENERAL_ADJUST;

#ifdef DEBUGIT
    del_debug(delivery, in_delivery, "Client before SP call");
#endif /* DEBUGIT */

#ifdef SWAP_ENDIAN
    SWAP_BYTE(in_delivery->s_W_ID);
    SWAP_BYTE(in_delivery->s_O_CARRIER_ID);
#endif //SWAP_ENDIAN

    EXEC SQL CALL dels ( :*in_del, :*out_del ) ;

#ifdef SWAP_ENDIAN
    SWAP_BYTE(in_delivery->s_W_ID);
    SWAP_BYTE(in_delivery->s_O_CARRIER_ID);

    for (orderIndex=0; orderIndex<10; orderIndex++) {
        SWAP_BYTE(delivery->s_O_ID[ orderIndex ]);
    }
    SWAP_BYTE(delivery->s_transtatus);
    SWAP_BYTE(delivery->deadlocks);
#endif //SWAP_ENDIAN

#ifdef DEBUGIT
    del_debug(delivery, in_delivery, "Client after SP call");
#endif /* DEBUGIT */

    if ( sqlca.sqlcode != 0 )
    {
        sqlerror( DELIVERY_SQL, "DEL", __FILE__, __LINE__, &sqlca );
        delivery->s_transtatus = FATAL_SQLERROR ;
        clientRc = FATAL_SQLERROR ;
    }

    if ( delivery->s_transtatus <= FATAL_SQLERROR )
    {
        del_debug(delivery, in_delivery, "DEL failed");
        clientRc = FATAL_SQLERROR ;
    }
}

```

```

}

return ( clientRc );
}

// -----
// Stock CLIENT
// -----

#undef w_id
#undef d_id

int stocklev_sql ( struct in_stocklev_struct * in_stocklev
, struct out_stocklev_struct * stocklev )
{
    struct sqlca sqlca ;

    int clientRc = TRAN_OK ;

    EXEC SQL BEGIN DECLARE SECTION;

    // input

    sqlint32  threshold ;

    // output

    sqlint32  low_stock ;

    EXEC SQL END DECLARE SECTION;

    #define w_id  in_stocklev->s_W_ID
    #define d_id  in_stocklev->s_D_ID
    #define threshold in_stocklev->s_threshold
    #define low_stock stocklev->s_low_stock

    stocklev->deadlocks = -1 ;
    stocklev->s_transtatus = TRAN_OK ;

    #ifdef DEBUGIT
    stk_debug(stocklev, in_stocklev, "Client before SQL call");
    #endif /* DEBUGIT */

    retry_tran:

    stocklev->deadlocks ++ ;

    EXEC SQL BEGIN COMPOUND NOT ATOMIC STATIC

    SELECT COUNT( S_I_ID ) INTO :low_stock

    FROM ( SELECT DISTINCT S_I_ID

           FROM ORDER_LINE , STOCK , DISTRICT

           WHERE D_W_ID = :w_id
               AND D_ID = :d_id
               AND OL_O_ID < d_next_o_id
               AND OL_O_ID >= ( d_next_o_id - 20 )
               AND OL_W_ID = D_W_ID
               AND OL_D_ID = D_ID
               AND S_I_ID = OL_I_ID
               AND S_W_ID = OL_W_ID
               AND S_QUANTITY < :threshold

           ) OLS

    WITH CS
;

```

```

COMMIT ;

END COMPOUND ;

#ifdef DEBUGIT
stk_debug(stocklev, in_stocklev, "Client after SQL call");
#endif /* DEBUGIT */

if ( sqlca.sqlcode != 0 )
{
    DLCHK( retry_tran ) ;

    sqlerror( STOCKLEV_SQL , "STK" , __FILE__ , __LINE__ , &sqlca);
    stocklev->s_transtatus = FATAL_SQLERROR ;
    clientRc = FATAL_SQLERROR ;

    stk_debug( stocklev, in_stocklev, "STK failed" ) ;

    EXEC SQL ROLLBACK WORK ;

    if ( sqlca.sqlcode != 0 )
    {
        sqlerror( STOCKLEV_SQL, "ROLLBACK FAILED", __FILE__, __LINE__, &sqlca ) ;
    }
}

return ( clientRc );
}

```

Src.Common/Makefile

```

#####
####
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#####

#
# Makefile - Makefile for Src.Common
#

include $(TPCC_ROOT)/Makefile.config

#
#####
# Preprocessor, Compiler and Linker Flags
#
#####

BND_OPTS = GRANT PUBLIC \
            MESSAGES $*.bnd.msg
PRP_OPTS = BINDFILE \
            OPTLEVEL 1 \
            ISOLATION RR \
            MESSAGES $*.prep.msg \
            LEVEL $(TPCC_VERSION) \
            NOLINEMACRO

INCLUDES = -I$(TPCC_SQLLIB)$(SLASH)include -I$(TPCC_ROOT)$(SLASH)include
CFLAGS = $(CFLAGS_OS) $(CFLAGS_DEBUG) $(INCLUDES) \

```

```

-DSQLA_NOLINES -D$(DB2EDITION) -D$(DB2VERSION) \
-D$(TPCC_SPTYPE)

UTIL_OBJ = tpcmisc$(OBJEXT) tpcbdbg$(OBJEXT)
UTIL_OBJ_DB2 = tpcctx$(OBJEXT)

#
#####
# User Targets
#
#####
all: dbgen connect $(UTIL_OBJ_DB2) disconnect

dbgen: $(UTIL_OBJ)

clean:
- $(ERASE) *$(OBJEXT) *.bnd *.msg tpcctx.c

#
#####
# Helper Targets
#
#####
connect:
- db2 connect to $(TPCC_DBNAME)

disconnect:
- db2 connect reset
- db2 terminate

rebind: connect
db2 bind tpcctx.bnd $(BND_OPTS)

#
#####
# Build Rules
#
#####
.SUFFIXES:
.SUFFIXES: $(OBJEXT) .c .sqc

.sqc.c:
@echo "Prepping $*.sqc"
-db2 prep $*.sqc $(PRP_OPTS)
@echo "Binding $*.bnd"
db2 bind $*.bnd $(BND_OPTS)

#
#####
# Dependencies
#
#####
# Source
tpccbdbg$(OBJEXT): tpcbdbg.c
tpccctx$(OBJEXT): tpcctx.c
tpccmisc$(OBJEXT): tpcmisc.c

# Headers
tpccbdbg.c: $(TPCC_ROOT)/include/db2tpcc.h

Src.Common/tpccctx.sqc

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```

```

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.....*/

/*
 *
 * tpcctx.sqc - TPCC context code
 *
 */

#include <string.h>
#include <sqlutil.h>
#include "db2tpcc.h"
#include "tpccdbg.h"

int connect_to_TM(char *in_dbname);
int connect_to_TM_auth(char *in_dbname, char *in_username, char *in_password);
int disconnect_from_TM(void);

int connect_to_TM(char *in_dbname)
{
    return connect_to_TM_auth(in_dbname, "", "");
}

int connect_to_TM_auth(char *in_dbname, char *in_username, char *in_password)
{
    SQL_STRUCTURE sqlca;
    int ConnectSQLCODE = 0;

    EXEC SQL BEGIN DECLARE SECTION;
    char dbname[9];
    char username[129];
    char password[15];
    EXEC SQL END DECLARE SECTION;

    /* Copy 9 characters - 8 for dbname, 1 for NULL */
    strncpy(dbname,in_dbname,9);
    if (strcmp(in_username,"") == 0)
    {
        EXEC SQL CONNECT TO :dbname IN SHARE MODE;
    } else {
        strncpy(username,in_username,128);
        strncpy(password,in_password,14);
        EXEC SQL CONNECT TO :dbname IN SHARE MODE USER :username
        USING :password;
    }

    ConnectSQLCODE = SQLCODE;
    if (ConnectSQLCODE != 0)
    {
        sqlerror( CLIENT_SQL, "CONNECT", __FILE__, __LINE__, &sqlca);
    }
    return ConnectSQLCODE;
}

return 0;
}

int disconnect_from_TM(void)
{
    SQL_STRUCTURE sqlca;
    int DisconnectSQLCODE = 0;

    EXEC SQL CONNECT RESET;

```

```

DisconnectSQLCODE = SQLCODE;
if (DisconnectSQLCODE != 0) {
    sqlerror( CLIENT_SQL, "DISCONNECT", __FILE__, __LINE__, &sqlca);
}

if (DisconnectSQLCODE) {
    return DisconnectSQLCODE;
}
return 0;
}

```

Src.Common/tpccdbg.c

```

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.....*/

/*
 * tccdbg.c - Debugging Routines
 *
 */

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <ctype.h>
#include <time.h>

#include "sqlca.h"
#include "sql.h"
#include "db2tpcc.h"
#include "tpccdbg.h"

#define DEBUG_FILENAME_SZ 128
#define DEBUG_PATH_SIZE 128

void del_print();
void new_print();
void ord_print();
void pay_print();
void stk_print();

void current_tmstamp(char *buf);

static int debugInit = 0;
static char debugPath[DEBUG_PATH_SIZE] = "";

/*-----*/
/* InitializeDebug */
/*-----*/
__inline void InitializeDebug(void) {
    if (debugInit == 0) {
        char *p = getenv("TPCC_DEBUGDIR");
        if (p) {
            strncpy(debugPath, p, DEBUG_PATH_SIZE);
        } else {
            strcpy(debugPath, "C:\\temp");
        }
        strcat(debugPath, "\\");
    }
}

```

```

}
    debugInit = 1;
}

/*-----*/
/* sqlerror */
/*-----*/
void sqlerror(int tranType, char *msg, char *file, int line, SQL_STRUCTURE sqlca *psqlca)
{
    FILE *err_fp = NULL;
    char err_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];
    char tranName[16];
    int j,k;
    char timeStamp[27];
    char errStr[512] = "";

    InitializeDebug();
    strncpy(err_fn, debugPath, DEBUG_PATH_SIZE);
    current_tmstamp(&timeStamp[0]);
    timeStamp[19] = (char)NULL;

    switch(tranType)
    {
        case NEWORD_SQL:
            // sprintf(err_fn, "%d.err.out", getpid());
            strcat(err_fn, "new.err.out");
            strcpy(tranName, "NEW_ORDER");
            break;

        case DELIVERY_SQL:
            // sprintf(err_fn, "%d.err.out", getpid());
            strcat(err_fn, "del.err.out");
            strcpy(tranName, "DELIVERY");
            break;

        case PAYMENT_SQL:
            // sprintf(err_fn, "%d.err.out", getpid());
            strcat(err_fn, "pay.err.out");
            strcpy(tranName, "PAYMENT");
            break;

        case ORDSTAT_SQL:
            // sprintf(err_fn, "%d.err.out", getpid());
            strcat(err_fn, "ord.err.out");
            strcpy(tranName, "ORDER_STAT");
            break;

        case STOCKLEV_SQL:
            //sprintf(err_fn, "%d.err.out", getpid());
            strcat(err_fn, "stk.err.out");
            strcpy(tranName, "STOCK_LVL");
            break;

        case 0:
            strcat(err_fn, "cli.err.out");
            strcpy(tranName, "CLIENT");
            break;

        default:
            return;
    }

    /* Generate Formatted Error Message */
    sqlintp(errStr, 512, 78, psqlca);

    if ((err_fp = fopen(err_fn, "a+")) == NULL)
    {
        return;
    }
}

```

```

fprintf(err_fp, "-----\n");
fprintf(err_fp, "Transaction: %s (%s)\n", tranName, msg);
fprintf(err_fp, "FILE %s (%u)\n", file, line);
fprintf(err_fp, "SQLCODE %d ", psqlca->sqlcode);
fprintf(err_fp, "PID %d ", getpid());
fprintf(err_fp, "TIME %s\n", timeStamp);
fprintf(err_fp, "-----\n");
fprintf(err_fp, "%s", errStr);
fprintf(err_fp, "-----\n");

if (psqlca->sqlerrmc[0] != '' || psqlca->sqlerrmc[1] != '')
{
    fprintf(err_fp, "slerrmc: ");

    for(j = 0; j < 5; j++)
    {
        for(k = 0; k < 16; k++) {
            int pos = j * 16 + k;
            if (pos < 70) fprintf(err_fp, "%02x ", psqlca->sqlerrmc[pos]);
            else fprintf(err_fp, " ");
        }
        fprintf(err_fp, " ");
        for(k = 0; k < 16; k++) {
            int pos = j * 16 + k;
            char c = ' ';
            if (pos < 70) {
                c = psqlca->sqlerrmc[pos];
                if (!sprint(c) c = ' ');
            }
            fprintf(err_fp, "%c", c);
        }
        fprintf(err_fp, "\n");
        if (j < 4) fprintf(err_fp, " ");
    }

    fprintf(err_fp, "sqlerrp: ");
    for(j = 0; j < 8; j++)
        fprintf(err_fp, "%c", psqlca->sqlerrp[j]);
    fprintf(err_fp, "\n");

    fprintf(err_fp, "sqlerrd: ");
    for(j = 0; j < 6; j++)
        fprintf(err_fp, " %d", psqlca->sqlerrd[j]);
    fprintf(err_fp, "\n");

    if (psqlca->sqlwarn[0] != '')
    {
        fprintf(err_fp, "sqlwarn: ");
        for(j = 0; j < 8; j++)
            fprintf(err_fp, "%c ", psqlca->sqlwarn[j]);
        fprintf(err_fp, "\n");
    }

    fprintf(err_fp, "\n");

    fclose(err_fp);
}

/*-----*/
/* del_debug */
/*-----*/
void del_debug (struct out_delivery_struct *delivery_ptr,
                struct in_delivery_struct *in_delivery,
                char *msg)
{
    char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

```

```

InitializeDebug();
strcpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
strcat(debug_fn, "del.debug.out");
del_print(delivery_ptr, in_delivery, debug_fn, msg);
}

/*-----*/
/* del_print */
/*-----*/
void del_print (struct out_delivery_struct *delivery_ptr,
                struct in_delivery_struct *in_delivery,
                char *filename,
                char *msg)
{
    FILE *debug_fp;
    char timeStamp[27];
    int j;

    current_tmstamp(&timeStamp[0]);
    timeStamp[19] = (char)NULL;

    if ((debug_fp = fopen(filename, "a+")) == NULL)
    {
        return;
    }

    fprintf(debug_fp, "Delivery debug information follows %s (%s)\n", timeStamp, msg);
    fprintf(debug_fp, " PID %d ", getpid());
    fprintf(debug_fp, "\n=====");

    fprintf(debug_fp, "in_delivery_struct {\n");
    fprintf(debug_fp, "ts_W_ID = %d (%X)\n",
            in_delivery->s_W_ID, in_delivery->s_W_ID);
    fprintf(debug_fp, "ts_O_CARRIER_ID = %d (%X)\n",
            in_delivery->s_O_CARRIER_ID, in_delivery->s_O_CARRIER_ID);
    fprintf(debug_fp, ")\n");

    fprintf(debug_fp, "out_delivery_struct {\n");
    fprintf(debug_fp, "ts_transtatus = %d (%X)\n",
            delivery_ptr->s_transtatus, delivery_ptr->s_transtatus);
    fprintf(debug_fp, "tdeadlocks = %d (%X)\n",
            delivery_ptr->deadlocks, delivery_ptr->deadlocks);

    for (j = 0; j < 10; j++) {
        fprintf(debug_fp, "\tts_O_ID[%d] = %d\n",
                j, delivery_ptr->s_O_ID[j]);
    }
    fprintf(debug_fp, "\t)\n");
    fclose(debug_fp);
}

/*-----*/
/* new_debug */
/*-----*/
void new_debug (struct out_newword_struct *newword_ptr,
                struct in_newword_struct *in_newword,
                char *msg)
{
    char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

    InitializeDebug();
    strcpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
    strcat(debug_fn, "new.debug.out");
    new_print(newword_ptr, in_newword, debug_fn, msg);
}

/*-----*/
/* new_print */
/*-----*/

```

```

void new_print (struct out_newword_struct *newword_ptr,
                struct in_newword_struct *in_newword,
                char *filename,
                char *msg)
{
    FILE *debug_fp;
    char timeStamp[27];
    int j, items;

    current_tmstamp(&timeStamp[0]);
    timeStamp[19] = (char)NULL;

    if ((debug_fp = fopen(filename, "a+")) == NULL)
    {
        return;
    }

    fprintf(debug_fp, "New order debug information follows %s (%s)\n", timeStamp, msg);
    fprintf(debug_fp, " PID %d ", getpid());
    fprintf(debug_fp, "\n=====");

    fprintf(debug_fp, "in_newword_struct {\n");

    fprintf(debug_fp, "ts_C_ID = %d (%X)\n",
            in_newword->s_C_ID, in_newword->s_C_ID);
    fprintf(debug_fp, "ts_W_ID = %d (%X)\n",
            in_newword->s_W_ID, in_newword->s_W_ID);
    fprintf(debug_fp, "ts_D_ID = %d (%X)\n",
            in_newword->s_D_ID, in_newword->s_D_ID);
    fprintf(debug_fp, "ts_O_OL_CNT = %d (%X)\n",
            in_newword->s_O_OL_CNT, in_newword->s_O_OL_CNT);
    fprintf(debug_fp, "ts_all_local = %d (%X)\n",
            in_newword->s_all_local, in_newword->s_all_local);
    // fprintf(debug_fp, "ts_transtatus = %d (%X)\n",
    // in_newword->s_transtatus, in_newword->s_transtatus);
    // fprintf(debug_fp, "tduplicate_items= %d (%X)\n",
    // in_newword->duplicate_items, in_newword->duplicate_items);

    fprintf(debug_fp, "titems {\n");
    items = in_newword->s_O_OL_CNT;
    for (j=0; j<items; j++) {
        if(j != 0)
            fprintf(debug_fp, "\n");
        fprintf(debug_fp, "\tts_OL_ID[%d] = %d (%X)\n",
                j, in_newword->in_item[j].s_OL_ID, in_newword->in_item[j].s_OL_ID);
        fprintf(debug_fp, "\tts_OL_SUPPLY_W_ID[%d] = %d (%X)\n",
                j, in_newword->in_item[j].s_OL_SUPPLY_W_ID, in_newword->
                in_item[j].s_OL_SUPPLY_W_ID);
        fprintf(debug_fp, "\tts_OL_QUANTITY[%d] = %d (%X)\n",
                j, in_newword->in_item[j].s_OL_QUANTITY, in_newword->
                in_item[j].s_OL_QUANTITY);
    }
    fprintf(debug_fp, "\t)\n");

    fprintf(debug_fp, "out_newword_struct {\n");
    fprintf(debug_fp, "ts_C_LAST = %s\n",
            newword_ptr->s_C_LAST);
    fprintf(debug_fp, "ts_C_CREDIT = %s\n",
            newword_ptr->s_C_CREDIT);
    fprintf(debug_fp, "ts_W_TAX = %04.4f\n",
            newword_ptr->s_W_TAX);
    fprintf(debug_fp, "ts_D_TAX = %04.4f\n",
            newword_ptr->s_D_TAX);
    fprintf(debug_fp, "ts_C_DISCOUNT = %04.4f\n",
            newword_ptr->s_C_DISCOUNT);
    fprintf(debug_fp, "ts_O_ID = %d (%X)\n",
            newword_ptr->s_O_ID, newword_ptr->s_O_ID);
    fprintf(debug_fp, "ts_O_OL_CNT = %d (%X)\n",
            newword_ptr->s_O_OL_CNT, newword_ptr->s_O_OL_CNT);
    fprintf(debug_fp, "ts_O_ENTRY_D = %s\n",

```

```

neword_ptr->s_O_ENTRY_D_time);
fprintf(debug_fp, "its_total_amount = %2f\n",
neword_ptr->s_total_amount);
fprintf(debug_fp, "its_transtatus = %d (%X)\n",
neword_ptr->s_transtatus, neword_ptr->s_transtatus);
fprintf(debug_fp, "tdeadlocks = %d (%X)\n",
neword_ptr->deadlocks, neword_ptr->deadlocks);

// fprintf(debug_fp, "its_W_ID = %d (%X)\n",
// neword_ptr->s_W_ID, neword_ptr->s_W_ID);
// fprintf(debug_fp, "its_D_ID = %d (%X)\n",
// neword_ptr->s_D_ID, neword_ptr->s_D_ID);
// fprintf(debug_fp, "its_all_local = %d (%X)\n",
// neword_ptr->s_all_local, neword_ptr->s_all_local);
// fprintf(debug_fp, "tduplicate_items= %d (%X)\n",
// neword_ptr->duplicate_items, neword_ptr->duplicate_items);

fprintf(debug_fp, "items {\n");
items = neword_ptr->s_O_OL_CNT;
for (j=0; j<items; j++) {
    if(j != 0)
        fprintf(debug_fp, "\n");
    fprintf(debug_fp, "\tits_I_NAME[%d] = %s\n",
j, neword_ptr->item[j].s_I_NAME);
    fprintf(debug_fp, "\tits_I_PRICE[%d] = %2f\n",
j, neword_ptr->item[j].s_I_PRICE);
    fprintf(debug_fp, "\tits_OL_AMOUNT[%d] = %2f\n",
j, neword_ptr->item[j].s_OL_AMOUNT);
    fprintf(debug_fp, "\tits_S_QUANTITY[%d] = %d (%X)\n",
j, neword_ptr->item[j].s_S_QUANTITY, neword_ptr->item[j].s_S_QUANTITY);
    fprintf(debug_fp, "\tits_brand_generic[%d] = %c\n",
j, neword_ptr->item[j].s_brand_generic);
}
fprintf(debug_fp, "\t}\n\n");
fclose(debug_fp);
}

```

```

/*-----*/
/* ord_debug */
/*-----*/
void ord_debug (struct out_ordstat_struct *ordstat_ptr,
struct in_ordstat_struct *in_ordstat,
char *msg)
{
char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

```

```

InitializeDebug();
strncpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
strcat(debug_fn, "ord.debug.out");
ord_print(ordstat_ptr, in_ordstat, debug_fn, msg);
}

```

```

/*-----*/
/* ord_print */
/*-----*/
void ord_print (struct out_ordstat_struct *ordstat_ptr,
struct in_ordstat_struct *in_ordstat,
char *filename,
char *msg)
{
FILE *debug_fp;
char timeStamp[27];
int j, items;

```

```

current_tmstamp(&timeStamp[0]);
timeStamp[19] = (char)NULL;

```

```

if ((debug_fp = fopen(filename, "a+")) == NULL)
{
return;
}

fprintf(debug_fp, "Order status debug information follows %s (%s)\n", timeStamp, msg);
fprintf(debug_fp, " PID %d ", getpid());
fprintf(debug_fp, "\n=====");

```

```

fprintf(debug_fp, "in_ordstat_struct {\n");
fprintf(debug_fp, "its_W_ID = %d (%X)\n",
in_ordstat->s_W_ID, in_ordstat->s_W_ID);
fprintf(debug_fp, "its_D_ID = %d (%X)\n",
in_ordstat->s_D_ID, in_ordstat->s_D_ID);
fprintf(debug_fp, "its_C_ID = %d (%X)\n",
in_ordstat->s_C_ID, in_ordstat->s_C_ID);
fprintf(debug_fp, "its_C_LAST = %s\n",
in_ordstat->s_C_LAST);
fprintf(debug_fp, "}\n\n");

```

```

fprintf(debug_fp, "out_ordstat_struct {\n");
fprintf(debug_fp, "its_C_ID = %d (%X)\n",
ordstat_ptr->s_C_ID, ordstat_ptr->s_C_ID);
fprintf(debug_fp, "its_C_FIRST = %s\n",
ordstat_ptr->s_C_FIRST);
fprintf(debug_fp, "its_C_MIDDLE = %s\n",
ordstat_ptr->s_C_MIDDLE);
fprintf(debug_fp, "its_C_LAST = %s\n",
ordstat_ptr->s_C_LAST);
fprintf(debug_fp, "its_C_BALANCE = %2f\n",
ordstat_ptr->s_C_BALANCE);
fprintf(debug_fp, "its_O_ID = %d (%X)\n",
ordstat_ptr->s_O_ID, ordstat_ptr->s_O_ID);
fprintf(debug_fp, "its_O_ENTRY_D = %s\n",
ordstat_ptr->s_O_ENTRY_D_time);
fprintf(debug_fp, "its_O_CARRIER_ID = %d (%X)\n",
ordstat_ptr->s_O_CARRIER_ID, ordstat_ptr->s_O_CARRIER_ID);
fprintf(debug_fp, "its_ol_cnt = %d (%X)\n",
ordstat_ptr->s_ol_cnt, ordstat_ptr->s_ol_cnt);
fprintf(debug_fp, "its_transtatus = %d (%X)\n",
ordstat_ptr->s_transtatus, ordstat_ptr->s_transtatus);
fprintf(debug_fp, "tdeadlocks = %d (%X)\n",
ordstat_ptr->deadlocks, ordstat_ptr->deadlocks);

```

```

fprintf(debug_fp, "items {\n");
items = ordstat_ptr->s_ol_cnt;
for (j = 0; j < items; j++) {
    if(j != 0)
        fprintf(debug_fp, "\n");
    fprintf(debug_fp, "\tits_OL_SUPPLY_W_ID[%d] = %d (%X)\n",
j, ordstat_ptr->item[j].s_OL_SUPPLY_W_ID, ordstat_ptr->
item[j].s_OL_SUPPLY_W_ID);
    fprintf(debug_fp, "\tits_OL_I_ID[%d] = %d (%X)\n",
j, ordstat_ptr->item[j].s_OL_I_ID, ordstat_ptr->item[j].s_OL_I_ID);
    fprintf(debug_fp, "\tits_OL_QUANTITY[%d] = %d (%X)\n",
j, ordstat_ptr->item[j].s_OL_QUANTITY, ordstat_ptr->item[j].s_OL_QUANTITY);
    fprintf(debug_fp, "\tits_OL_AMOUNT[%d] = %2f\n",
j, ordstat_ptr->item[j].s_OL_AMOUNT);
    fprintf(debug_fp, "\tits_OL_DELIVERY_D[%d] = %s\n",
j, ordstat_ptr->item[j].s_OL_DELIVERY_D_time);
}
fprintf(debug_fp, "\t}\n\n");
fclose(debug_fp);
}

```

```

/*-----*/
/* pay_debug */
/*-----*/
void pay_debug (struct out_payment_struct *payment_ptr,

```

```

struct in_payment_struct *in_payment,
char *msg)
{
char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

InitializeDebug();
strncpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
strcat(debug_fn, "pay.debug.out");
pay_print(payment_ptr, in_payment, debug_fn, msg);
}

```

```

/*-----*/
/* pay_print */
/*-----*/

```

```

void pay_print (struct out_payment_struct *payment_ptr,
struct in_payment_struct *in_payment,
char *filename,
char *msg)
{
FILE *debug_fp;
char timeStamp[27];

```

```

current_tmstamp(&timeStamp[0]);
timeStamp[19] = (char)NULL;

```

```

if ((debug_fp = fopen(filename, "a+")) == NULL)
{
return;
}

```

```

fprintf(debug_fp, "Payment debug information follows %s (%s)\n", timeStamp, msg);
fprintf(debug_fp, " PID %d ", getpid());
fprintf(debug_fp, "\n=====");

```

```

fprintf(debug_fp, "in_payment_struct {\n");
fprintf(debug_fp, "its_H_AMOUNT = %2f\n",
in_payment->s_H_AMOUNT);
fprintf(debug_fp, "its_C_ID = %d (%X)\n",
in_payment->s_C_ID, in_payment->s_C_ID);
fprintf(debug_fp, "its_W_ID = %d (%X)\n",
in_payment->s_W_ID, in_payment->s_W_ID);
fprintf(debug_fp, "its_D_ID = %d (%X)\n",
in_payment->s_D_ID, in_payment->s_D_ID);
fprintf(debug_fp, "its_C_D_ID = %d (%X)\n",
in_payment->s_C_D_ID, in_payment->s_C_D_ID);
fprintf(debug_fp, "its_C_W_ID = %d (%X)\n",
in_payment->s_C_W_ID, in_payment->s_C_W_ID);
fprintf(debug_fp, "its_C_LAST = %s\n",
in_payment->s_C_LAST);
fprintf(debug_fp, "\n\n");

```

```

fprintf(debug_fp, "out_payment_struct {\n");
fprintf(debug_fp, "its_C_CREDIT_LIM = %2f\n",
payment_ptr->s_C_CREDIT_LIM);
fprintf(debug_fp, "its_C_DISCOUNT = %04.f\n",
payment_ptr->s_C_DISCOUNT);
fprintf(debug_fp, "its_C_BALANCE = %2f\n",
payment_ptr->s_C_BALANCE);
fprintf(debug_fp, "its_C_ID = %d (%X)\n",
payment_ptr->s_C_ID, payment_ptr->s_C_ID);
fprintf(debug_fp, "its_W_STREET_1 = %s\n",
payment_ptr->s_W_STREET_1);
fprintf(debug_fp, "its_W_STREET_2 = %s\n",
payment_ptr->s_W_STREET_2);
fprintf(debug_fp, "its_W_CITY = %s\n",
payment_ptr->s_W_CITY);
fprintf(debug_fp, "its_W_STATE = %s\n",
payment_ptr->s_W_STATE);
fprintf(debug_fp, "its_W_ZIP = %s\n",
payment_ptr->s_W_ZIP);
}

```

```

fprintf(debug_fp,"ts_D_STREET_1 = %s\n",
        payment_ptr->s_D_STREET_1);
fprintf(debug_fp,"ts_D_STREET_2 = %s\n",
        payment_ptr->s_D_STREET_2);
fprintf(debug_fp,"ts_D_CITY = %s\n",
        payment_ptr->s_D_CITY);
fprintf(debug_fp,"ts_D_STATE = %s\n",
        payment_ptr->s_D_STATE);
fprintf(debug_fp,"ts_D_ZIP = %s\n",
        payment_ptr->s_D_ZIP);
fprintf(debug_fp,"ts_C_FIRST = %s\n",
        payment_ptr->s_C_FIRST);
fprintf(debug_fp,"ts_C_MIDDLE = %s\n",
        payment_ptr->s_C_MIDDLE);
fprintf(debug_fp,"ts_C_LAST = %s\n",
        payment_ptr->s_C_LAST);
fprintf(debug_fp,"ts_C_STREET_1 = %s\n",
        payment_ptr->s_C_STREET_1);
fprintf(debug_fp,"ts_C_STREET_2 = %s\n",
        payment_ptr->s_C_STREET_2);
fprintf(debug_fp,"ts_C_CITY = %s\n",
        payment_ptr->s_C_CITY);
fprintf(debug_fp,"ts_C_STATE = %s\n",
        payment_ptr->s_C_STATE);
fprintf(debug_fp,"ts_C_ZIP = %s\n",
        payment_ptr->s_C_ZIP);
fprintf(debug_fp,"ts_C_PHONE = %s\n",
        payment_ptr->s_C_PHONE);
fprintf(debug_fp,"ts_C_SINCE = %s\n",
        payment_ptr->s_C_SINCE_time);
fprintf(debug_fp,"ts_C_CREDIT = %s\n",
        payment_ptr->s_C_CREDIT);
fprintf(debug_fp,"ts_C_DATA = %s\n",
        payment_ptr->s_C_DATA);
fprintf(debug_fp,"ts_transtatus = %d (%X)\n",
        payment_ptr->s_transtatus,payment_ptr->s_transtatus);
fprintf(debug_fp,"tdeadlocks = %d (%X)\n",
        payment_ptr->deadlocks,payment_ptr->deadlocks);
fprintf(debug_fp,"n\n");
fclose(debug_fp);
}

/*-----*/
/* stk_debug */
/*-----*/
void stk_debug (struct out_stocklev_struct *stocklev,
               struct in_stocklev_struct *in_stocklev,
               char *msg)
{
    char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

    InitializeDebug();
    strncpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
    strcat(debug_fn, "stk.debug.out");
    stk_print(stocklev, in_stocklev, debug_fn, msg);
}

/*-----*/
/* stk_print */
/*-----*/
void stk_print (struct out_stocklev_struct *stocklev,
               struct in_stocklev_struct *in_stocklev,
               char *filename,
               char *msg)
{
    FILE *debug_fp;
    char timeStamp[27];

    current_tmstamp(&timeStamp[0]);

```

```

timeStamp[19] = (char)NULL;

if ((debug_fp = fopen(filename, "a+")) == NULL)
{
    return;
}

fprintf(debug_fp,"Stock level debug information follows %s (%s)\n", timeStamp, msg);
fprintf(debug_fp, " PID %d ", getpid());
fprintf(debug_fp,"n=====n");

fprintf(debug_fp,"in_stocklev_struct {n");
fprintf(debug_fp,"ts_W_ID = %d (%X)\n",
        in_stocklev->s_W_ID, in_stocklev->s_W_ID);
fprintf(debug_fp,"ts_D_ID = %d (%X)\n",
        in_stocklev->s_D_ID, in_stocklev->s_D_ID);
fprintf(debug_fp,"ts_threshold = %d (%X)\n",
        in_stocklev->s_threshold, in_stocklev->s_threshold);
fprintf(debug_fp,"}n");

fprintf(debug_fp,"out_stocklev_struct {n");
fprintf(debug_fp,"ts_transtatus = %d (%X)\n",
        stocklev->s_transtatus, stocklev->s_transtatus);
fprintf(debug_fp,"tdeadlocks = %d (%X)\n",
        stocklev->deadlocks, stocklev->deadlocks);
fprintf(debug_fp,"ts_low_stock = %d (%X)\n",
        stocklev->s_low_stock, stocklev->s_low_stock);
fprintf(debug_fp,"}n");
fclose(debug_fp);
}

void current_tmstamp(char *buf)
{
    time_t t = time(NULL);
    strncpy(buf,ctime(&t),19);
}

include/db2tpcc.h

/*-----*/
** Licensed Materials - Property of IBM
**
** Governed under the terms of the International
** License Agreement for Non-Warranted Sample Code.
**
** (C) COPYRIGHT International Business Machines Corp. 1996 - 2006
** All Rights Reserved.
**
** US Government Users Restricted Rights - Use, duplication or
** disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
/*-----*/

/*
 * db2tpcc.h - Macros and Miscellany
 */

#ifndef __DB2TPCC_H
#define __DB2TPCC_H

#include <sys/types.h>

#include "ival.h"

/* ----- */
/* Transaction Return Codes (s_transtatus) */
/* ----- */

#define INVALID_ITEM 100
#define TRAN_OK 0

```

```

#define FATAL_SQLERROR -1

/* ----- */
/* Definition of Unused and Bad Items */
/* ----- */
/* Define unused item ID to be 0. This allows the SUT to determine the
/* number of items in the order as required by 2.4.1.3 and 2.4.2.2 since
/* the assumption that any item with OL_I_ID = 0 is unused will be true.
/* This in turn requires that the value used for an invalid item is
/* equal to ITEMS + 1.
/* ----- */

#define INVALID_ITEM_ID (2 * ITEMS) + 1
#define UNUSED_ITEM_ID 0

#define MIN_WAREHOUSE 1
#define MAX_WAREHOUSE WAREHOUSES

/*-----*/
/* NURand Constants */
/* C_C_LAST_RUN and C_C_LAST_LOAD must adhere to clause 2.1.6.
/* Analysis indicates that a C_LAST delta of 85 is optimal.
/*-----*/

#define C_C_LAST_RUN 88
#define C_C_LAST_LOAD 173
#define C_C_ID 319
#define C_OL_I_ID 3849
#define A_C_LAST 255
#define A_C_ID 1023
#define A_OL_I_ID 8191

/*-----*/
/* Transaction Type Identifiers */
/*-----*/

#define CLIENT_SQL 0
#define NEWORD_SQL 1
#define PAYMENT_SQL 2
#define ORDSTAT_SQL 3
#define DELIVERY_SQL 4
#define STOCKLEV_SQL 5

#define SPGENERAL_PAD 3
#define SPGENERAL_ADJUST sizeof(int16_t)

struct in_neword_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    struct in_items_struct {
        int32_t s_OL_I_ID;
        int32_t s_OL_SUPPLY_W_ID;
        int16_t s_OL_QUANTITY;
        int16_t pad1[3];
    } in_item[15];
    int32_t s_C_ID;
    int32_t s_W_ID;
    int16_t s_D_ID;
    int16_t s_OL_CNT; /* init by SUT */
    int16_t s_all_local;
    int16_t duplicate_items;
};

struct out_neword_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    struct items_struct {
        float s_I_PRICE;
        float s_OL_AMOUNT;
        int16_t s_S_QUANTITY;
        int16_t pad2;
    }
};

```

```

char s_l_NAME[25];
char s_brand_generic;
) item[15];
float s_W_TAX;
float s_D_TAX;
float s_C_DISCOUNT;
float s_total_amount;
int32_t s_O_ID;
int16_t s_O_OL_CNT;
int16_t s_transtatus;
int16_t deadlocks;
char s_C_LAST[17];
char s_C_CREDIT[3];
char s_O_ENTRY_D_time[27];

```

```

};

struct in_payment_struct {
int16_t len;
int16_t pad[SPGENERAL_PAD];
float s_H_AMOUNT;
int32_t s_W_ID;
int32_t s_C_W_ID;
int32_t s_C_ID;
int16_t s_C_D_ID;
int16_t s_D_ID;
char s_C_LAST[17];
};

```

```

struct out_payment_struct {
int16_t len;
int16_t pad[SPGENERAL_PAD];
double s_C_CREDIT_LIM;
double s_C_BALANCE;
float s_C_DISCOUNT;
int32_t s_C_ID;
int16_t s_transtatus;
int16_t deadlocks;
char s_W_STREET_1[21];
char s_W_STREET_2[21];
char s_W_CITY[21];
char s_W_STATE[3];
char s_W_ZIP[10];
char s_D_STREET_1[21];
char s_D_STREET_2[21];
char s_D_CITY[21];
char s_D_STATE[3];
char s_D_ZIP[10];
char s_C_FIRST[17];
char s_C_MIDDLE[3];
char s_C_LAST[17];
char s_C_STREET_1[21];
char s_C_STREET_2[21];
char s_C_CITY[21];
char s_C_STATE[3];
char s_C_ZIP[10];
char s_C_PHONE[17];
char s_C_CREDIT[3];
char s_C_DATA[20];
char s_H_DATE_time[27];
char s_C_SINCE_time[27];
};

```

```

struct in_ordstat_struct {
int16_t len;
int16_t pad[SPGENERAL_PAD];
int32_t s_C_ID;
int32_t s_W_ID;
int16_t s_D_ID;
int16_t pad1[3];
};

```

```

char s_C_LAST[17];
};

struct out_ordstat_struct {
int16_t len;
int16_t pad[SPGENERAL_PAD];
double s_C_BALANCE;
int32_t s_C_ID;
int32_t s_O_ID;
int16_t s_O_CARRIER_ID;
int16_t s_ol_cnt;
int16_t pad1[2];
struct oitems_struct {
double s_OL_AMOUNT;
int32_t s_OL_I_ID;
int32_t s_OL_SUPPLY_W_ID;
int16_t s_OL_QUANTITY;
int16_t pad2;
char s_OL_DELIVERY_D_time[27];
} item[15];
int16_t s_transtatus;
int16_t deadlocks;
char s_C_FIRST[17];
char s_C_MIDDLE[3];
char s_C_LAST[17];
char s_O_ENTRY_D_time[27];
int16_t pad3[2];
};

```

```

struct in_delivery_struct {
int16_t len;
int16_t pad[SPGENERAL_PAD];
int32_t s_W_ID;
int16_t s_O_CARRIER_ID;
};

```

```

struct out_delivery_struct {
int16_t len;
int16_t pad[SPGENERAL_PAD];
int32_t s_O_ID[10];
int16_t s_transtatus;
int16_t deadlocks;
};

```

```

struct in_stocklev_struct {
int16_t len;
int16_t pad[SPGENERAL_PAD];
int32_t s_threshold;
int32_t s_W_ID;
int16_t s_D_ID;
};

```

```

struct out_stocklev_struct {
int16_t len;
int16_t pad[SPGENERAL_PAD];
int32_t s_low_stock;
int16_t s_transtatus;
int16_t deadlocks;
};

```

```

/* ***** */
/* Transaction Prototypes */
/* ***** */

```

```

#ifdef __cplusplus
extern "C" {
#endif

```

```

extern int neword_sql(struct in_neword_struct*, struct out_neword_struct*);
extern int payment_sql(struct in_payment_struct*, struct out_payment_struct*);

```

```

extern int ordstat_sql(struct in_ordstat_struct*, struct out_ordstat_struct*);
extern int delivery_sql(struct in_delivery_struct*, struct out_delivery_struct*);
extern int stocklev_sql(struct in_stocklev_struct*, struct out_stocklev_struct*);

```

```

#ifdef __cplusplus
}
#endif

```

```

/* ***** */
/* DB2 Connect/Disconnect & Thread Context Wrappers */
/* ***** */

```

```

#ifdef __cplusplus
extern "C" {
#endif

```

```

extern int connect_to_TM(char*);
extern int connect_to_TM_auth(char*, char*, char*);
extern int disconnect_from_TM(void);

```

```

#ifdef __cplusplus
}
#endif

```

```

#endif // __DB2TPCC_H

```

include/tpccapp.h

```

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***** */

```

```

/*
* tpccapp.h - Application Macros
*/

```

```

#ifdef __TPCCAPP_H
#define __TPCCAPP_H

```

```

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <time.h>

```

```

#include "sqlenv.h"
#define daricall __stdcall

```

```

#include "sqlca.h"
#include "sqlcodes.h"

```

```

#ifdef SWAP_ENDIAN
#define SWAP_BYTE(Var) SwapEndian((void*)&Var, sizeof(Var))

```

```

/* *****
FUNCTION: SwapEndian
PURPOSE: Swap the byte order of a structure
EXAMPLE: int I=0x12345678; SWAP_BYTE(I); I => 0x78563412;
IMPLEMENTATION: Fold Addr in half, swap header & tail by XOR op
e.g.: *a = 0x12 [ Addr + 0];

```



```

*b = 0x78 [ Add + 4 - 0 - 1 = Addr+3];
*a ^= *b; // sets *a to 0x6A
*b ^= *a; // sets *b to 0x12
*a ^= *b; // sets *a to 0x78

Now *a => 0x78 && *b => 0x12
...../

void SwapEndian(void *Addr, int nb)
{
    int i;
    for (i=0; i<nb/2; i++)
    {
        char *a = (char*)Addr+i;
        char *b = (char*)Addr+(nb-i-1);

        *a ^= *b;
        *b ^= *a;
        *a ^= *b;
    }
}
#endif //SWAP_ENDIAN

...../
/* SQLCODE Macros */
...../

#define DLCHK(a) \
if (sqlca.sqlcode == SQL_RC_E911) { goto a; }

/* ..... */
/* In NOT ATOMIC COMPOUND SQL, all statements will be executed, but not */
/* all will necessarily complete successfully. We can use sqlerrd(4) to */
/* determine how many statements succeeded, but this won't tell us what */
/* statements failed. In order to determine this, we need to look at */
/* sqlerrmc, which has the following structure: HHHXNNNSSSSXNNNSSSS... */
/* (See the docs for more details.) Since we're interested in the first */
/* failing statement, we can look at elements 5 and 6, which will contain */
/* the first two digits of NNN (which is right-padded with spaces). We */
/* need to look at the first two digits since some of our compound blocks */
/* have > 9 statements. We convert these digits from ASCII to an int and */
/* set 'last' to this value. */
/* ..... */

#define NACOMPCHK(last) \
if (sqlca.sqlcode != SQL_RC_E1339) { last = -1; } \
else { int a = ((sqlca.sqlerrmc[4] == 0x20) ? 0 : sqlca.sqlerrmc[4]-0x30); \
int b = ((sqlca.sqlerrmc[5] == 0x20) ? 0 : sqlca.sqlerrmc[5]-0x30); \
if (b == 0) { last = a; } else { last = a * 10 + b; } \
}

#endif // __TPCCAPP_H

```

include/lval.h

```

/* lval.h - generated automatically at 20060905.1052 */

#ifndef __LVAL_H
#define __LVAL_H
#define WAREHOUSES 41600
#define DISTRICTS_PER_WAREHOUSE 10
#define CUSTOMERS_PER_DISTRICT 3000
#define ITEMS 100000
#define STOCK_PER_WAREHOUSE 100000
#define MIN_OL_PER_ORDER 5
#define MAX_OL_PER_ORDER 15
#define NU_ORDERS_PER_DISTRICT 900
#endif // __LVAL_H

```

include/tpccdbg.h

```

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**.....*/

/*
 * tpccdbg.h - Debugging Macros
 */

#ifndef __TPCCDBG_H
#define __TPCCDBG_H

#ifdef __cplusplus
extern "C" {
#endif

extern void sqlerror (int tranType, char *msg, char *file, int line,
SQL_STRUCTURE sqlca *psqlca);

extern void new_debug (struct out_neword_struct *neword_ptr,
struct in_neword_struct *in_neword_ptr,
char *msg);
extern void pay_debug (struct out_payment_struct *payment_ptr,
struct in_payment_struct *in_payment_ptr,
char *msg);
extern void ord_debug (struct out_ordstat_struct *ordstat_ptr,
struct in_ordstat_struct *in_ordstat_ptr,
char *msg);
extern void del_debug (struct out_delivery_struct *delivery_ptr,
struct in_delivery_struct *in_delivery_ptr,
char *msg);
extern void stk_debug (struct out_stocklev_struct *stocklev_ptr,
struct in_stocklev_struct *in_stocklev_ptr,
char *msg);

extern void new_print (struct out_neword_struct *neword_ptr,
struct in_neword_struct *in_neword_ptr,
char *filename,
char *msg);
extern void pay_print (struct out_payment_struct *payment_ptr,
struct in_payment_struct *in_payment_ptr,
char *filename,
char *msg);
extern void ord_print (struct out_ordstat_struct *ordstat_ptr,
struct in_ordstat_struct *in_ordstat_ptr,
char *filename,
char *msg);
extern void del_print (struct out_delivery_struct *delivery_ptr,
struct in_delivery_struct *in_delivery_ptr,
char *filename,
char *msg);
extern void stk_print (struct out_stocklev_struct *stocklev_ptr,
struct in_stocklev_struct *in_stocklev_ptr,
char *filename,
char *msg);

#ifdef __cplusplus
}
#endif

```

#endif // __TPCCDBG_H

tpccenv.bat

```

@REM .....
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@REM .....
@REM
@REM tpccenv.bat - Windows Environment Setup
@REM

@REM The Kit Version
set TPCC_VERSION=CK060815

@REM The DB2 Instance Name (for DB2)
set DB2INSTANCE=%USERNAME%

@REM The OS being used (i.e. "WINDOWS")
set PLATFORM=WINDOWS

@REM The type of make command and slash used by the OS
@REM (i.e. UNIX - "/", WINDOWS - "\")
@REM These are referenced all over the kit.
set SLASH=\
set MAKE=nmake

@REM Specifies whether or not to use dari stored proc's for the TPC-C driver. Set to
either DARIVERSION or NONDARI;
@REM set TPCC_SPTYPE=NOSP
@REM set TPCC_SPTYPE=SPGENERAL2
set TPCC_SPTYPE=SPGENERAL
@REM set TPCC_SPTYPE=DARI2SQLDA

set DB2VERSION=v8

@REM The schema name is typically the SQL authorization ID (or username).
@REM This is required for runstats and EEE.
set TPCC_SCHEMA=%USERNAME%

@REM DB2 EE/EEE Configuration
set DB2EDITION=EE
@REM set DB2EDITION=EEE
set DB2NODE=0
@REM set to the number of nodes you have. Set to 1 for EE.
set DB2NODES=1

@REM TPCC General Configuration
@REM ** IMPORTANT NOTE **
@REM The kit is not guaranteed to work properly if TPCC_ROOT or TPCC_SQLLIB
@REM have spaces in them. If you absolutely must use paths with spaces,
@REM then the entire path must be surrounded by double quotes.
@REM For example: HOME="C:\Program Files\IBM"
set HOME=C:\home\tpcc
set TPCC_DBNAME=TPCC
set TPCC_ROOT=%HOME%\tpc-c.ibm
set TPCC_SQLLIB=C:\Progra-1\IBM\sqllib
set TPCC_RUNDATA=%HOME%\tpc-c.ibm\tpccdata

@REM TPCC Debug Configuration

```

```
@REM This is the path where all error and debug logs are placed.
@REM To get debugging from within the stored procedures, you must
@REM set DB2ENVLIST="TPCC_DEBUGDIR" in tpcc.config.
set TPCC_DEBUGDIR=c:\temp
```

```
@REM Specifies where stored procedures should be placed and if they should
@REM be fenced.
set TPCC_SPDIR=%TPCC_SQLLIB%\function
set TPCC_FENCED=NO
```

9.2. Transaction Code

Makefile.config

```
#####
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#####
#####
#
# Makefile.config - Linux 64-bit
#
#
```

```
# Make Configuration
MAKE=make
```

```
# Compiler Configuration.
# CFLAGS_DEBUG may be set to "-g", "-DDEBUGIT" "-g -DDEBUGIT" or left blank
CC=cc
CFLAGS_OS=-DSQLUNIX -DSQLLinux -O2 -fpic -m64
CFLAGS_OUT=-o
CFLAGS_DEBUG=
```

```
# Linker Configuration
LD_EXEC=gcc
LD_STORP=gcc
LDFLAGS_EXEC=
LDFLAGS_SHLIB=-shared
LDFLAGS_STORP=$(LDFLAGS_SHLIB)
LDFLAGS_LIB=-L$(TPCC_SQLLIB)/lib -ldb2 -m64
LDFLAGS_OUT=
```

```
# Library Configuration
AR=ar
ARFLAGS=-rv
ARFLAGS_LIB=
ARFLAGS_OUT=
```

```
# OS Commands
ERASE=rm -f
```

```
ERASEDIR=$(ERASE) -R
MOVE=mv
COPY=cp

# OS File Extensions & Path Separators
OBJEXT=.o
LIBEXT=.a
SHLIBEXT=.so
BINEXT=
SLASH=/
CMDSEP=;
```

Src.Common/Makefile

```
#####
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#####
#####
```

```
#
# Makefile - Makefile for Src.Common
#
#
```

```
include $(TPCC_ROOT)/Makefile.config
```

```
#
#####
# Preprocessor, Compiler and LInker Flags
#
#####
```

```
BND_OPTS = GRANT PUBLIC \
            MESSAGES $*.bnd.msg
PRP_OPTS = BINDFILE \
            OPTLEVEL 1 \
            ISOLATION RR \
            MESSAGES $*.prep.msg \
            LEVEL $(TPCC_VERSION) \
            NOLINEMACRO
```

```
INCLUDE = -I$(TPCC_SQLLIB)/include -I$(TPCC_ROOT)/include
```

```
CFLAGS = $(CFLAGS_OS) $(CFLAGS_DEBUG) $(INCLUDE) \
          -DSQLA_NOLINES -D$(DB2EDITION) -D$(DB2VERSION) \
          -D$(TPCC_SPTYPE)
```

```
UTIL_OBJ_DBG = tpccdbg$(OBJEXT)
UTIL_OBJ_GEN = tpccmisc$(OBJEXT)
UTIL_OBJ_DB2 = tpccctx$(OBJEXT)
```

```
#
#####
# User Targets
#
#####
```

```
all: $(UTIL_OBJ_DBG) $(UTIL_OBJ_GEN) connect $(UTIL_OBJ_DB2) disconnect
```

```
dbgen: $(UTIL_OBJ_GEN)
```

```
clean:
- $(ERASE) *$(OBJEXT) *.bnd *.msg tpccctx.c
```

```
#
#####
# Helper Targets
#
#####
```

```
connect:
- db2 connect to $(TPCC_DBNAME)
```

```
disconnect:
- db2 connect reset
- db2 terminate
```

```
rebind: connect
db2 bind tpccctx.bnd $(BND_OPTS)
```

```
#
#####
# Build Rules
#
#####
```

```
.SUFFIXES:
.SUFFIXES: $(OBJEXT) .c .sqc
```

```
.sqc.c:
@echo "Prepping $*.sqc"
-db2 prep $*.sqc $(PRP_OPTS)
@echo "Binding $*.bnd"
db2 bind $*.bnd $(BND_OPTS)
```

```
#
#####
# Dependencies
#
#####
```

```
# Source
tpccdbg$(OBJEXT): tpccdbg.c
tpccctx$(OBJEXT): tpccctx.c
tpccmisc$(OBJEXT): tpccmisc.c
```

```
# Headers
tpccdbg.c: $(TPCC_ROOT)/include/db2tpcc.h
```

Src.Common/tpccctx.sqc

```
/*
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*/
```

```
/*
*
* tpccctx.sqc - TPCC context code
*
*/
```

```

#include <string.h>
#include <sqlutil.h>
#include "db2tpcc.h"
#include "tpccdbg.h"

int connect_to_TM(char *in_dbname);
int connect_to_TM_auth(char *in_dbname, char *in_username, char *in_password);
int disconnect_from_TM(void);

int connect_to_TM(char *in_dbname)
{
    return connect_to_TM_auth(in_dbname, "", "");
}

int connect_to_TM_auth(char *in_dbname, char *in_username, char *in_password)
{
    SQL_STRUCTURE sqlca;
    int ConnectSQLCODE = 0;

    EXEC SQL BEGIN DECLARE SECTION;
    char dbname[9];
    char username[129];
    char password[15];
    EXEC SQL END DECLARE SECTION;

    /* Copy 9 characters - 8 for dbname, 1 for NULL */
    strncpy(dbname,in_dbname,9);
    if (strcmp(in_username,"") == 0)
    {
        EXEC SQL CONNECT TO :dbname IN SHARE MODE;
    } else {
        strncpy(username,in_username,128);
        strncpy(password,in_password,14);
        EXEC SQL CONNECT TO :dbname IN SHARE MODE USER :username
        USING :password;
    }

    ConnectSQLCODE = SQLCODE;
    if (ConnectSQLCODE != 0)
    {
        sqlerror( CLIENT_SQL, "CONNECT", __FILE__, __LINE__, &sqlca);
    }
    return ConnectSQLCODE;
}

return 0;
}

int disconnect_from_TM(void)
{
    SQL_STRUCTURE sqlca;
    int DisconnectSQLCODE = 0;

    EXEC SQL CONNECT RESET;

    DisconnectSQLCODE = SQLCODE;
    if (DisconnectSQLCODE != 0) {
        sqlerror( CLIENT_SQL, "DISCONNECT", __FILE__, __LINE__, &sqlca);
    }

    if (DisconnectSQLCODE) {
        return DisconnectSQLCODE;
    }
    return 0;
}

```

Src.Common/tpccdbg.c

```

/*-----*/
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/*-----*/

/*
 * tccdbg.c - Debugging Routines
 */

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <ctype.h>
#include <time.h>

#include "sqlca.h"
#include "sql.h"
#include "db2tpcc.h"
#include "tpccdbg.h"

#define DEBUG_FILENAME_SZ 128
#define DEBUG_PATH_SIZE 128

void del_print();
void new_print();
void ord_print();
void pay_print();
void stk_print();

void current_tmstamp(char *buf);

static int debugInit = 0;
static char debugPath[DEBUG_PATH_SIZE] = "";

/*-----*/
/* InitializeDebug */
/*-----*/
__inline void InitializeDebug(void) {
    if (debugInit == 0) {
        char *p = getenv("TPCC_DEBUGDIR");
        if (p) {
            strcpy(debugPath, p, DEBUG_PATH_SIZE);
        } else {
            strcpy(debugPath, "/tmp");
        }
        strcat(debugPath, "/");
    }
    debugInit = 1;
}

/*-----*/
/* sqlerror */
/*-----*/
void sqlerror(int tranType, char *msg, char *file, int line, SQL_STRUCTURE sqlca *psqlca)
{
    FILE *err_fp = NULL;
    char err_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];
    char tranName[16];
    int j,k;
    char timeStamp[27];

```

```

char errStr[512] = "";

InitializeDebug();
strcpy(err_fn, debugPath, DEBUG_PATH_SIZE);
current_tmstamp(&timeStamp[0]);
timeStamp[19] = (char)NULL;

switch(tranType)
{
    case NEWORD_SQL:
        // sprintf(err_fn, "%d.err.out", getpid());
        strcat(err_fn, "new.err.out");
        strcpy(tranName, "NEW_ORDER");
        break;

    case DELIVERY_SQL:
        // sprintf(err_fn, "%d.err.out", getpid());
        strcat(err_fn, "del.err.out");
        strcpy(tranName, "DELIVERY");
        break;

    case PAYMENT_SQL:
        // sprintf(err_fn, "%d.err.out", getpid());
        strcat(err_fn, "pay.err.out");
        strcpy(tranName, "PAYMENT");
        break;

    case ORDSTAT_SQL:
        // sprintf(err_fn, "%d.err.out", getpid());
        strcat(err_fn, "ord.err.out");
        strcpy(tranName, "ORDER_STAT");
        break;

    case STOCKLEV_SQL:
        //sprintf(err_fn, "%d.err.out", getpid());
        strcat(err_fn, "stk.err.out");
        strcpy(tranName, "STOCK_LVL");
        break;

    case 0:
        strcat(err_fn, "cli.err.out");
        strcpy(tranName, "CLIENT");
        break;

    default:
        return;
}

/* Generate Formatted Error Message */
sqlaintp(errStr, 512, 78, psqlca);

if ((err_fp = fopen(err_fn, "a+")) == NULL)
{
    return;
}

fprintf(err_fp, "-----\n");
fprintf(err_fp, "Transaction: %s (%s)\n", tranName, msg);
fprintf(err_fp, "FILE %s (%u)\n", file, line);
fprintf(err_fp, "SQLCODE %d ", psqlca->sqlcode);
fprintf(err_fp, "PID %d ", getpid());
fprintf(err_fp, "TIME %s\n", timeStamp);
fprintf(err_fp, "-----\n");
fprintf(err_fp, "%s", errStr);
fprintf(err_fp, "-----\n");

if (psqlca->sqlerrmc[0] != ' ' || psqlca->sqlerrmc[1] != ' ')
{
    fprintf(err_fp, "slerrmc: ");

```

```

for(j = 0; j < 5; j++)
{
    for(k = 0; k < 16; k++) {
        int pos = j * 16 + k;
        if (pos < 70) fprintf(err_fp, "%02x ", psqlca->sqlerrmc[pos]);
        else fprintf(err_fp, " ");
    }
    fprintf(err_fp, " |");
    for(k = 0; k < 16; k++) {
        int pos = j * 16 + k;
        char c = " ";
        if (pos < 70) {
            c = psqlca->sqlerrmc[pos];
            if (!isprint(c)) c = " ";
        }
        fprintf(err_fp, "%c", c);
    }
    fprintf(err_fp, "\n");
    if (j < 4) fprintf(err_fp, " ");
}

fprintf(err_fp, "sqlerrp: ");
for(j = 0; j < 8; j++)
    fprintf(err_fp, "%c", psqlca->sqlerrp[j]);
fprintf(err_fp, "\n");

fprintf(err_fp, "sqlerrd: ");
for(j = 0; j < 6; j++)
    fprintf(err_fp, "%d", psqlca->sqlerrd[j]);
fprintf(err_fp, "\n");

if (psqlca->sqlwarn[0] != ' ')
{
    fprintf(err_fp, "sqlwarn: ");
    for(j = 0; j < 8; j++)
        fprintf(err_fp, "%c ", psqlca->sqlwarn[j]);
    fprintf(err_fp, "\n");
}

fprintf(err_fp, "\n");

fclose(err_fp);

/*-----*/
/* del_debug */
/*-----*/
void del_debug (struct out_delivery_struct *delivery_ptr,
                struct in_delivery_struct *in_delivery,
                char *msg)
{
    char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

    InitializeDebug();
    strncpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
    strcat(debug_fn, "del.debug.out");
    del_print(delivery_ptr, in_delivery, debug_fn, msg);
}

/*-----*/
/* del_print */
/*-----*/
void del_print (struct out_delivery_struct *delivery_ptr,
               struct in_delivery_struct *in_delivery,
               char *filename,
               char *msg)
{

```

```

FILE *debug_fp;
char timeStamp[27];
int j;

current_tmstamp(&timeStamp[0]);
timeStamp[19] = (char)NULL;

if ((debug_fp = fopen(filename, "a+")) == NULL)
{
    return;
}

fprintf(debug_fp, "Delivery debug information follows %s (%s)\n", timeStamp, msg);
fprintf(debug_fp, " PID %d ", getpid());
fprintf(debug_fp, "\n=====");

fprintf(debug_fp, "in_delivery_struct {\n");
fprintf(debug_fp, "  ts_W_ID = %d (%X)\n",
        in_delivery->s_W_ID, in_delivery->s_W_ID);
fprintf(debug_fp, "  ts_O_CARRIER_ID = %d (%X)\n",
        in_delivery->s_O_CARRIER_ID, in_delivery->s_O_CARRIER_ID);
fprintf(debug_fp, "}\n");

fprintf(debug_fp, "out_delivery_struct {\n");
fprintf(debug_fp, "  ts_transtatus = %d (%X)\n",
        delivery_ptr->s_transtatus, delivery_ptr->s_transtatus);
fprintf(debug_fp, "  deadlocks = %d (%X)\n",
        delivery_ptr->deadlocks, delivery_ptr->deadlocks);

for (j = 0; j < 10; j++) {
    fprintf(debug_fp, "\tts_O_ID[%d] = %d\n",
            j, delivery_ptr->s_O_ID[j]);
}
fprintf(debug_fp, "\t}\n");
fclose(debug_fp);

/*-----*/
/* new_debug */
/*-----*/
void new_debug (struct out_neword_struct *neword_ptr,
               struct in_neword_struct *in_neword,
               char *msg)
{
    char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

    InitializeDebug();
    strncpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
    strcat(debug_fn, "new.debug.out");
    new_print(neword_ptr, in_neword, debug_fn, msg);
}

/*-----*/
/* new_print */
/*-----*/
void new_print (struct out_neword_struct *neword_ptr,
               struct in_neword_struct *in_neword,
               char *filename,
               char *msg)
{
    FILE *debug_fp;
    char timeStamp[27];
    int j, items;

    current_tmstamp(&timeStamp[0]);
    timeStamp[19] = (char)NULL;

    if ((debug_fp = fopen(filename, "a+")) == NULL)
    {

```

```

        return;
    }

    fprintf(debug_fp, "New order debug information follows %s (%s)\n", timeStamp, msg);
    fprintf(debug_fp, " PID %d ", getpid());
    fprintf(debug_fp, "\n=====");

    fprintf(debug_fp, "in_neword_struct {\n");

    fprintf(debug_fp, "  ts_C_ID = %d (%X)\n",
            in_neword->s_C_ID, in_neword->s_C_ID);
    fprintf(debug_fp, "  ts_W_ID = %d (%X)\n",
            in_neword->s_W_ID, in_neword->s_W_ID);
    fprintf(debug_fp, "  ts_D_ID = %d (%X)\n",
            in_neword->s_D_ID, in_neword->s_D_ID);
    fprintf(debug_fp, "  ts_O_OL_CNT = %d (%X)\n",
            in_neword->s_O_OL_CNT, in_neword->s_O_OL_CNT);
    fprintf(debug_fp, "  ts_all_local = %d (%X)\n",
            in_neword->s_all_local, in_neword->s_all_local);
    // fprintf(debug_fp, "  ts_transtatus = %d (%X)\n",
    //         in_neword->s_transtatus, in_neword->s_transtatus);
    // fprintf(debug_fp, "  duplicate_items = %d (%X)\n",
    //         in_neword->duplicate_items, in_neword->duplicate_items);

    fprintf(debug_fp, "  items {\n");
    items = in_neword->s_O_OL_CNT;
    for (j=0; j<items; j++) {
        if(j != 0)
            fprintf(debug_fp, "\n");
        fprintf(debug_fp, "  ts_OL_I_ID[%d] = %d (%X)\n",
                j, in_neword->in_item[j].s_OL_I_ID, in_neword->in_item[j].s_OL_I_ID);
        fprintf(debug_fp, "  ts_OL_SUPPLY_W_ID[%d] = %d (%X)\n",
                j, in_neword->in_item[j].s_OL_SUPPLY_W_ID, in_neword->in_item[j].s_OL_SUPPLY_W_ID);
        fprintf(debug_fp, "  ts_OL_QUANTITY[%d] = %d (%X)\n",
                j, in_neword->in_item[j].s_OL_QUANTITY, in_neword->in_item[j].s_OL_QUANTITY);
    }
    fprintf(debug_fp, "\t}\n");

    fprintf(debug_fp, "out_neword_struct {\n");
    fprintf(debug_fp, "  ts_C_LAST = %s\n",
            neword_ptr->s_C_LAST);
    fprintf(debug_fp, "  ts_C_CREDIT = %s\n",
            neword_ptr->s_C_CREDIT);
    fprintf(debug_fp, "  ts_W_TAX = %04.4f\n",
            neword_ptr->s_W_TAX);
    fprintf(debug_fp, "  ts_D_TAX = %04.4f\n",
            neword_ptr->s_D_TAX);
    fprintf(debug_fp, "  ts_C_DISCOUNT = %04.4f\n",
            neword_ptr->s_C_DISCOUNT);
    fprintf(debug_fp, "  ts_O_ID = %d (%X)\n",
            neword_ptr->s_O_ID, neword_ptr->s_O_ID);
    fprintf(debug_fp, "  ts_O_OL_CNT = %d (%X)\n",
            neword_ptr->s_O_OL_CNT, neword_ptr->s_O_OL_CNT);
    fprintf(debug_fp, "  ts_O_ENTRY_D = %s\n",
            neword_ptr->s_O_ENTRY_D_time);
    fprintf(debug_fp, "  ts_total_amount = %02f\n",
            neword_ptr->s_total_amount);
    fprintf(debug_fp, "  ts_transtatus = %d (%X)\n",
            neword_ptr->s_transtatus, neword_ptr->s_transtatus);
    fprintf(debug_fp, "  deadlocks = %d (%X)\n",
            neword_ptr->deadlocks, neword_ptr->deadlocks);

    // fprintf(debug_fp, "  ts_W_ID = %d (%X)\n",
    //         neword_ptr->s_W_ID, neword_ptr->s_W_ID);
    // fprintf(debug_fp, "  ts_D_ID = %d (%X)\n",
    //         neword_ptr->s_D_ID, neword_ptr->s_D_ID);
    // fprintf(debug_fp, "  ts_all_local = %d (%X)\n",
    //         neword_ptr->s_all_local, neword_ptr->s_all_local);

```

```
// fprintf(debug_fp, "duplicate_items= %d (%X)\n",
// neword_ptr->duplicate_items, neword_ptr->duplicate_items);
```

```
fprintf(debug_fp, "items {\n");
items = neword_ptr->s_O_OL_CNT;
for (j=0; j<items; j++) {
    if(j != 0)
        fprintf(debug_fp, "\n");
    fprintf(debug_fp, "lts_l_NAME[%d] = %s\n",
        j, neword_ptr->item[j].s_l_NAME);
    fprintf(debug_fp, "lts_l_PRICE[%d] = %.2f\n",
        j, neword_ptr->item[j].s_l_PRICE);
    fprintf(debug_fp, "lts_OL_AMOUNT[%d] = %.2f\n",
        j, neword_ptr->item[j].s_OL_AMOUNT);
    fprintf(debug_fp, "lts_S_QUANTITY[%d] = %d (%X)\n",
        j, neword_ptr->item[j].s_S_QUANTITY, neword_ptr->item[j].s_S_QUANTITY);
    fprintf(debug_fp, "lts_brand_generic[%d] = %c\n",
        j, neword_ptr->item[j].s_brand_generic);
}
fprintf(debug_fp, "\n");
fclose(debug_fp);
}
```

```
/*-----*/
/* ord_debug */
/*-----*/
void ord_debug (struct out_ordstat_struct *ordstat_ptr,
                struct in_ordstat_struct *in_ordstat,
                char *msg)
{
    char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

    InitializeDebug();
    strncpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
    strcat(debug_fn, "ord.debug.out");
    ord_print(ordstat_ptr, in_ordstat, debug_fn, msg);
}
```

```
/*-----*/
/* ord_print */
/*-----*/
void ord_print (struct out_ordstat_struct *ordstat_ptr,
                struct in_ordstat_struct *in_ordstat,
                char *filename,
                char *msg)
{
    FILE *debug_fp;
    char timeStamp[27];
    int j, items;
```

```
current_tmstamp(&timeStamp[0]);
timeStamp[19] = (char)NULL;
```

```
if ((debug_fp = fopen(filename, "a+")) == NULL)
{
    return;
}
```

```
fprintf(debug_fp, "Order status debug information follows %s (%s)\n", timeStamp, msg);
fprintf(debug_fp, " PID %d ", getpid());
fprintf(debug_fp, "\n=====\\n");
```

```
fprintf(debug_fp, "in_ordstat_struct {\n");
fprintf(debug_fp, "lts_W_ID = %d (%X)\n",
        in_ordstat->s_W_ID, in_ordstat->s_W_ID);
fprintf(debug_fp, "lts_D_ID = %d (%X)\n",
        in_ordstat->s_D_ID, in_ordstat->s_D_ID);
```

```
fprintf(debug_fp, "lts_C_ID = %d (%X)\n",
        in_ordstat->s_C_ID, in_ordstat->s_C_ID);
fprintf(debug_fp, "lts_C_LAST = %s\n",
        in_ordstat->s_C_LAST);
fprintf(debug_fp, "\n");
```

```
fprintf(debug_fp, "out_ordstat_struct {\n");
fprintf(debug_fp, "lts_C_ID = %d (%X)\n",
        ordstat_ptr->s_C_ID, ordstat_ptr->s_C_ID);
fprintf(debug_fp, "lts_C_FIRST = %s\n",
        ordstat_ptr->s_C_FIRST);
fprintf(debug_fp, "lts_C_MIDDLE = %s\n",
        ordstat_ptr->s_C_MIDDLE);
fprintf(debug_fp, "lts_C_LAST = %s\n",
        ordstat_ptr->s_C_LAST);
fprintf(debug_fp, "lts_C_BALANCE = %.2f\n",
        ordstat_ptr->s_C_BALANCE);
fprintf(debug_fp, "lts_O_ID = %d (%X)\n",
        ordstat_ptr->s_O_ID, ordstat_ptr->s_O_ID);
fprintf(debug_fp, "lts_O_ENTRY_D = %s\n",
        ordstat_ptr->s_O_ENTRY_D_time);
fprintf(debug_fp, "lts_O_CARRIER_ID = %d (%X)\n",
        ordstat_ptr->s_O_CARRIER_ID, ordstat_ptr->s_O_CARRIER_ID);
fprintf(debug_fp, "lts_ol_cnt = %d (%X)\n",
        ordstat_ptr->s_ol_cnt, ordstat_ptr->s_ol_cnt);
fprintf(debug_fp, "lts_transtatus = %d (%X)\n",
        ordstat_ptr->s_transtatus, ordstat_ptr->s_transtatus);
fprintf(debug_fp, "lts_deadlocks = %d (%X)\n",
        ordstat_ptr->s_deadlocks, ordstat_ptr->s_deadlocks);
```

```
fprintf(debug_fp, "items {\n");
items = ordstat_ptr->s_ol_cnt;
for (j = 0; j < items; j++) {
    if(j != 0)
        fprintf(debug_fp, "\n");
    fprintf(debug_fp, "lts_OL_SUPPLY_W_ID[%d] = %d (%X)\n",
        j, ordstat_ptr->item[j].s_OL_SUPPLY_W_ID, ordstat_ptr->item[j].s_OL_SUPPLY_W_ID);
    fprintf(debug_fp, "lts_OL_I_ID[%d] = %d (%X)\n",
        j, ordstat_ptr->item[j].s_OL_I_ID, ordstat_ptr->item[j].s_OL_I_ID);
    fprintf(debug_fp, "lts_OL_QUANTITY[%d] = %d (%X)\n",
        j, ordstat_ptr->item[j].s_OL_QUANTITY, ordstat_ptr->item[j].s_OL_QUANTITY);
    fprintf(debug_fp, "lts_OL_AMOUNT[%d] = %.2f\n",
        j, ordstat_ptr->item[j].s_OL_AMOUNT);
    fprintf(debug_fp, "lts_OL_DELIVERY_D[%d] = %s\n",
        j, ordstat_ptr->item[j].s_OL_DELIVERY_D_time);
}
fprintf(debug_fp, "\n");
fclose(debug_fp);
}
```

```
/*-----*/
/* pay_debug */
/*-----*/
void pay_debug (struct out_payment_struct *payment_ptr,
                struct in_payment_struct *in_payment,
                char *msg)
{
    char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

    InitializeDebug();
    strncpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
    strcat(debug_fn, "pay.debug.out");
    pay_print(payment_ptr, in_payment, debug_fn, msg);
}
```

```
/*-----*/
/* pay_print */
/*-----*/
```

```
void pay_print (struct out_payment_struct *payment_ptr,
                struct in_payment_struct *in_payment,
                char *filename,
                char *msg)
{
    FILE *debug_fp;
    char timeStamp[27];
```

```
current_tmstamp(&timeStamp[0]);
timeStamp[19] = (char)NULL;
```

```
if ((debug_fp = fopen(filename, "a+")) == NULL)
{
    return;
}
```

```
fprintf(debug_fp, "Payment debug information follows %s (%s)\n", timeStamp, msg);
fprintf(debug_fp, " PID %d ", getpid());
fprintf(debug_fp, "\n=====\\n");
```

```
fprintf(debug_fp, "in_payment_struct {\n");
fprintf(debug_fp, "lts_H_AMOUNT = %.2f\n",
        in_payment->s_H_AMOUNT);
fprintf(debug_fp, "lts_C_ID = %d (%X)\n",
        in_payment->s_C_ID, in_payment->s_C_ID);
fprintf(debug_fp, "lts_W_ID = %d (%X)\n",
        in_payment->s_W_ID, in_payment->s_W_ID);
fprintf(debug_fp, "lts_D_ID = %d (%X)\n",
        in_payment->s_D_ID, in_payment->s_D_ID);
fprintf(debug_fp, "lts_C_D_ID = %d (%X)\n",
        in_payment->s_C_D_ID, in_payment->s_C_D_ID);
fprintf(debug_fp, "lts_C_W_ID = %d (%X)\n",
        in_payment->s_C_W_ID, in_payment->s_C_W_ID);
fprintf(debug_fp, "lts_C_LAST = %s\n",
        in_payment->s_C_LAST);
fprintf(debug_fp, "\n");
```

```
fprintf(debug_fp, "out_payment_struct {\n");
fprintf(debug_fp, "lts_C_CREDIT_LIM = %.2f\n",
        payment_ptr->s_C_CREDIT_LIM);
fprintf(debug_fp, "lts_C_DISCOUNT = %.04f\n",
        payment_ptr->s_C_DISCOUNT);
fprintf(debug_fp, "lts_C_BALANCE = %.2f\n",
        payment_ptr->s_C_BALANCE);
fprintf(debug_fp, "lts_C_ID = %d (%X)\n",
        payment_ptr->s_C_ID, payment_ptr->s_C_ID);
fprintf(debug_fp, "lts_W_STREET_1 = %s\n",
        payment_ptr->s_W_STREET_1);
fprintf(debug_fp, "lts_W_STREET_2 = %s\n",
        payment_ptr->s_W_STREET_2);
fprintf(debug_fp, "lts_W_CITY = %s\n",
        payment_ptr->s_W_CITY);
fprintf(debug_fp, "lts_W_STATE = %s\n",
        payment_ptr->s_W_STATE);
fprintf(debug_fp, "lts_W_ZIP = %s\n",
        payment_ptr->s_W_ZIP);
fprintf(debug_fp, "lts_D_STREET_1 = %s\n",
        payment_ptr->s_D_STREET_1);
fprintf(debug_fp, "lts_D_STREET_2 = %s\n",
        payment_ptr->s_D_STREET_2);
fprintf(debug_fp, "lts_D_CITY = %s\n",
        payment_ptr->s_D_CITY);
fprintf(debug_fp, "lts_D_STATE = %s\n",
        payment_ptr->s_D_STATE);
fprintf(debug_fp, "lts_D_ZIP = %s\n",
        payment_ptr->s_D_ZIP);
fprintf(debug_fp, "lts_C_FIRST = %s\n",
        payment_ptr->s_C_FIRST);
fprintf(debug_fp, "lts_C_MIDDLE = %s\n",
        payment_ptr->s_C_MIDDLE);
```

```

fprintf(debug_fp,"ts_C_LAST      = %s\n",
        payment_ptr->s_C_LAST);
fprintf(debug_fp,"ts_C_STREET_1  = %s\n",
        payment_ptr->s_C_STREET_1);
fprintf(debug_fp,"ts_C_STREET_2  = %s\n",
        payment_ptr->s_C_STREET_2);
fprintf(debug_fp,"ts_C_CITY      = %s\n",
        payment_ptr->s_C_CITY);
fprintf(debug_fp,"ts_C_STATE     = %s\n",
        payment_ptr->s_C_STATE);
fprintf(debug_fp,"ts_C_ZIP       = %s\n",
        payment_ptr->s_C_ZIP);
fprintf(debug_fp,"ts_C_PHONE     = %s\n",
        payment_ptr->s_C_PHONE);
fprintf(debug_fp,"ts_C_SINCE     = %s\n",
        payment_ptr->s_C_SINCE);
fprintf(debug_fp,"ts_C_CREDIT    = %s\n",
        payment_ptr->s_C_CREDIT);
fprintf(debug_fp,"ts_C_DATA      = %s\n",
        payment_ptr->s_C_DATA);
fprintf(debug_fp,"ts_transtatus  = %d (%X)\n",
        payment_ptr->s_transtatus);
fprintf(debug_fp,"tdeadlocks    = %d (%X)\n",
        payment_ptr->deadlocks);
fclose(debug_fp);
}

```

```

/*-----*/
/* stk_debug          */
/*-----*/
void stk_debug (struct out_stocklev_struct *stocklev,
               struct in_stocklev_struct *in_stocklev,
               char *msg)
{
    char debug_fn[DEBUG_PATH_SIZE + DEBUG_FILENAME_SZ];

    InitializeDebug();
    strncpy(debug_fn, debugPath, DEBUG_PATH_SIZE);
    strcat(debug_fn, "stk.debug.out");
    stk_print(stocklev, in_stocklev, debug_fn, msg);
}

```

```

/*-----*/
/* stk_print          */
/*-----*/
void stk_print (struct out_stocklev_struct *stocklev,
               struct in_stocklev_struct *in_stocklev,
               char *filename,
               char *msg)
{
    FILE *debug_fp;
    char timeStamp[27];

    current_tmstamp(&timeStamp[0]);
    timeStamp[19] = (char)NULL;

    if ((debug_fp = fopen(filename, "a+")) == NULL)
    {
        return;
    }

    fprintf(debug_fp,"Stock level debug information follows %s (%s)\n", timeStamp, msg);
    fprintf(debug_fp," PID %d ", getpid());
    fprintf(debug_fp,"n=====n");

    fprintf(debug_fp,"in_stocklev_struct {n");
    fprintf(debug_fp,"ts_W_ID      = %d (%X)\n",
            in_stocklev->s_W_ID, in_stocklev->s_W_ID);
}

```

```

fprintf(debug_fp,"ts_D_ID      = %d (%X)\n",
        in_stocklev->s_D_ID, in_stocklev->s_D_ID);
fprintf(debug_fp,"ts_threshold  = %d (%X)\n",
        in_stocklev->s_threshold, in_stocklev->s_threshold);
fprintf(debug_fp,"n");

```

```

fprintf(debug_fp,"out_stocklev_struct {n");
fprintf(debug_fp,"ts_transtatus  = %d (%X)\n",
        stocklev->s_transtatus, stocklev->s_transtatus);
fprintf(debug_fp,"tdeadlocks    = %d (%X)\n",
        stocklev->deadlocks, stocklev->deadlocks);
fprintf(debug_fp,"ts_low_stock   = %d (%X)\n",
        stocklev->s_low_stock, stocklev->s_low_stock);
fprintf(debug_fp,"n");
fclose(debug_fp);
}

```

```

void current_tmstamp(char *buf)
{
    time_t t = time(NULL);
    strncpy(buf,ctime(&t),19);
}

```

Src.Common/tpccmisc.c

```

/*-----*/
** Licensed Materials - Property of IBM
**
** Governed under the terms of the International
** License Agreement for Non-Warranted Sample Code.
**
** (C) COPYRIGHT International Business Machines Corp. 1996 - 2006
** All Rights Reserved.
**
** US Government Users Restricted Rights - Use, duplication or
** disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
/*-----*/

```

```

/*
 *
 * tpccmisc.c - Miscellaneous routines
 *
 */

```

```

#include <stdlib.h>
#include <sys/types.h>
#include <sys/time.h>

```

```

double current_time_ms(void);
double current_time(void);

```

```

/* Current time in SECONDS, precision SECONDS */
double current_time(void)
{
    /* use time() to get seconds */
    return(time(NULL));
}

```

```

/* Current time in SECONDS, precision MILLISECONDS */
double current_time_ms(void)
{
    /* gettimeofday() returns seconds and microseconds */
    /* convert to fractional seconds */
    struct timeval t;
    gettimeofday(&t,NULL);
    return (t.tv_sec + (double)t.tv_usec/(1000*1000));
}

```

Src.Srv/Makefile

```

#####
####
## Licensed Materials - Property of IBM
##
## Governed under the terms of the International
## License Agreement for Non-Warranted Sample Code.
##
## (C) COPYRIGHT International Business Machines Corp. 1996 - 2006
## All Rights Reserved.
##
## US Government Users Restricted Rights - Use, duplication or
## disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
#####
####
##
#
# Makefile - Makefile for Src.Srv
#
#
include $(TPCC_ROOT)/Makefile.config

#
#####
# Preprocessor, Compiler and Linker Flags
#
#####
BND_OPTS = GRANT PUBLIC \
            MESSAGES $.bnd.msg
PRP_OPTS = BINDFILE \
            EXPLAIN ALL \
            MESSAGES $.prep.msg

INCLUDE = -I$(TPCC_SQLLIB)/include -I$(TPCC_ROOT)/include

CFLAGS = $(CFLAGS_OS) $(INCLUDE) $(CFLAGS_DEBUG) \
          -D$(DB2EDITION) -D$(DB2VERSION) \
          -DSQLA_NOLINES -DLINT_ARGS

LDLFLAGS = $(LDLFLAGS_STORP) $(LDLFLAGS_LIB)

#
#####
# File Collections
#
#####
STORED_PROCS = new ord del

UTIL_OBJ = $(TPCC_ROOT)/Src.Common/tpccmisc$(OBJEXT) \
           $(TPCC_ROOT)/Src.Common/tpccdbg$(OBJEXT)

EXE = news ords dels

#
#####
# User Targets
#
#####
all: connect explain catalog $(EXE) install plan disconnect

clean: connect uncatalog unexplain disconnect
      - $(ERASE) $(TPCC_SPDIR)/$(SLASH)news
      - $(ERASE) $(TPCC_SPDIR)/$(SLASH)ords
      - $(ERASE) $(TPCC_SPDIR)/$(SLASH)dels
      - $(ERASE) *.bnd *.msg *.out *$(OBJEXT) $(EXE) tpcc_all_sql.c

```

```

- $(ERASE) TPCC_ALL*.plan

#
#####
# Helper Targets
#
#####

catalog:uncatalog
- perl $(TPCC_ROOT)/$(SLASH)utils/$(SLASH)genproc.pl $(STORED_PROCS)
- db2 -td% -vf cat-proc.ddl +o -z cat-proc.out
- db2 -td% -vf cat-func.ddl +o -z cat-func.out

uncatalog:
- perl $(TPCC_ROOT)/$(SLASH)utils/$(SLASH)genproc.pl $(STORED_PROCS)
- db2 -td% -vf uncat-func.ddl +o -z uncat-func.out
- db2 -td% -vf uncat-proc.ddl +o -z uncat-proc.out

explain:
- perl $(TPCC_ROOT)/$(SLASH)utils/$(SLASH)fixup_explain.pl
- db2 -td% -vf $(TPCC_ROOT)/$(SLASH)utils/$(SLASH)EXPLAIN.DDL +o -z EXPLAIN.out

unexplain:
- db2 -td% -vf $(TPCC_ROOT)/$(SLASH)utils/$(SLASH)UNEXPLAIN.DDL +o -z UNEXPLAIN.out

connect:
- db2 connect to $(TPCC_DBNAME)

disconnect:
- db2 connect reset
- db2 terminate

plan:
- db2exfmt -d $(TPCC_DBNAME) -e $(TPCC_SCHEMA) -s $(TPCC_SCHEMA) -w -1 -n
TPCC_ALL -g -# 0 -o TPCC_ALL.exfmt.plan
- (export DB2EXPLN_BUFFER=3000000; db2expln -d $(TPCC_DBNAME) -c
$(TPCC_SCHEMA) -p TPCC_ALL -s 0 -g -o TPCC_ALL.expln.plan )

rebind: connect catalog
db2 bind tpc_all_sql.bnd $(BND_OPTS) QUERYOPT 7

#
#####
# Install Targets
#
#####

install: $(EXE)
- mkdir $(TPCC_SPDIR)
$(COPY) ords $(TPCC_SPDIR)
$(COPY) news $(TPCC_SPDIR)
$(COPY) dels $(TPCC_SPDIR)

#
#####
# Build Rules
#
#####

.SUFFIXES: $(OBJEXT) .c .sqc

# d230437mte: QUERYOPT 7 required for UNION ALL
# Only stock needs CS , and that can be specified on the SELECT statement
tpcc_all_sql.c:
@echo "Prepping $.sqc"
db2 prep $.sqc $(PRP_OPTS) ISOLATION RR
@echo "Binding $.bnd"
db2 bind $.bnd $(BND_OPTS) QUERYOPT 7

```

```

# Stored procedures are built in a special way

tpcc_all_sql$(OBJEXT):
$(CC) -c tpc_all_sql.c $(CFLAGS) -D$(TPCC_SPTYPE) $(CFLAGS_OUT)$@

$(EXE): $(UTIL_OBJ) tpc_all_sql.o
$(LD_STORP) $(LDLFLAGS) $(UTIL_OBJ) tpc_all_sql.o $(LDLFLAGS_OUT)$@

#
#####
# Dependencies
#
#####

# Executables (Stored Procedures)
$(EXE): $(UTIL_OBJ) tpc_all_sql.o

# Source
tpcc_all_sql$(OBJEXT): tpc_all_sql.c

# Headers
tpcc_all_sql.c: $(TPCC_ROOT)/include/db2tpcc.h

Src.Srv/cat-func.ddl
-----
-- Licensed Materials - Property of IBM
--
-- Governed under the terms of the International
-- License Agreement for Non-Warranted Sample Code.
--
-- (C) COPYRIGHT International Business Machines Corp. 1996 - 2006
-- All Rights Reserved.
--
-- US Government Users Restricted Rights - Use, duplication or
-- disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
-----
--
-- cat-func.ddl - Create table functions
--
--
--
-- DELIVERY
--
CREATE FUNCTION DEL( W_ID INTEGER
, D_ID SMALLINT
, CARRIER_ID SMALLINT
)
RETURNS TABLE ( O_ID INTEGER )

SPECIFIC DELIVERY

MODIFIES SQL DATA DETERMINISTIC NO EXTERNAL ACTION LANGUAGE SQL

VAR: BEGIN ATOMIC

DECLARE O_ID INTEGER ;
DECLARE C_ID INTEGER ;
DECLARE AMOUNT DECIMAL(12,2) ;

/* Delete the order from new order table */

SET VAR.O_ID = ( SELECT NO_O_ID

FROM OLD TABLE ( DELETE

```

```

FROM ( SELECT NO_O_ID

FROM NEW_ORDER

WHERE NO_W_ID = DEL.W_ID
AND NO_D_ID = DEL.D_ID

ORDER BY NO_O_ID ASC

FETCH FIRST 1 ROW ONLY
) AS NEW_ORDER
) AS D
)
;

/* Update the order as delivered and retrieve the customer id */

SET VAR.C_ID = ( SELECT O_C_ID

FROM OLD TABLE ( UPDATE ORDERS

SET O_CARRIER_ID = DEL.CARRIER_ID

WHERE O_W_ID = DEL.W_ID
AND O_D_ID = DEL.D_ID
AND O_ID = VAR.O_ID
) AS U
)
;

SET VAR.AMOUNT = ( SELECT SUM( OL_AMOUNT )

FROM OLD TABLE ( UPDATE ORDER_LINE

SET OL_DELIVERY_D = CURRENT_TIMESTAMP

WHERE OL_W_ID = DEL.W_ID
AND OL_D_ID = DEL.D_ID
AND OL_O_ID = VAR.O_ID
) AS U
)
;

/* Charge the customer */

UPDATE CUSTOMER

SET C_BALANCE = C_BALANCE + VAR.AMOUNT
, C_DELIVERY_CNT = C_DELIVERY_CNT + SMALLINT( 1 )

WHERE C_W_ID = DEL.W_ID
AND C_D_ID = DEL.D_ID
AND C_ID = VAR.C_ID
;

/* Return the order id to the caller (or NULL) */

RETURN VALUES VAR.O_ID ;

END
%

--
-- ORDER STATUS
--

CREATE FUNCTION ORD_C_LAST( W_ID INTEGER
, D_ID SMALLINT
, C_LAST VARCHAR(16)

```

```

)
RETURNS TABLE( O_ID INTEGER
, O_CARRIER_ID SMALLINT
, O_ENTRY_D TIMESTAMP
, C_BALANCE DECIMAL(12,2)
, C_FIRST VARCHAR(16)
, C_MIDDLE CHAR(2)
, C_ID INTEGER
)
)

SPECIFIC ORD_C_LAST

READS SQL DATA NO EXTERNAL ACTION DETERMINISTIC LANGUAGE SQL

VAR: BEGIN ATOMIC

DECLARE C_BALANCE DECIMAL(12,2);
DECLARE C_FIRST VARCHAR(16);
DECLARE C_MIDDLE CHAR(2);
DECLARE C_ID INTEGER;
DECLARE O_ID INTEGER;
DECLARE O_CARRIER_ID SMALLINT;
DECLARE O_ENTRY_D TIMESTAMP;

/* Retrieve the Customer information */

SET ( C_BALANCE, C_FIRST, C_MIDDLE, C_ID )

= ( SELECT C_BALANCE, C_FIRST, C_MIDDLE, C_ID

FROM ( SELECT C_ID
, C_BALANCE
, C_FIRST
, C_MIDDLE
, COUNT(*) OVER() AS COUNT
, ROWNUMBER() OVER (ORDER BY C_FIRST) AS NUM

FROM CUSTOMER
WHERE C_W_ID = ORD_C_LAST.W_ID
AND C_D_ID = ORD_C_LAST.D_ID
AND C_LAST = ORD_C_LAST.C_LAST

) AS V1

WHERE NUM = (COUNT + BIGINT( 1 )) / BIGINT( 2 )

)
;

SET ( O_ID, O_CARRIER_ID, O_ENTRY_D )

= ( SELECT O_ID
, O_CARRIER_ID
, O_ENTRY_D

FROM ORDERS

WHERE O_W_ID = ORD_C_LAST.W_ID
AND O_D_ID = ORD_C_LAST.D_ID
AND O_C_ID = VAR.C_ID

ORDER BY O_ID DESC
FETCH FIRST 1 ROW ONLY

)
;

RETURN VALUES ( VAR.O_ID
, VAR.O_CARRIER_ID
, VAR.O_ENTRY_D

```

```

, VAR.C_BALANCE
, VAR.C_FIRST
, VAR.C_MIDDLE
, VAR.C_ID
)
;

END
%

CREATE FUNCTION ORD_C_ID( W_ID INTEGER
, D_ID SMALLINT
, C_ID INTEGER
)

RETURNS TABLE( O_ID INTEGER
, O_CARRIER_ID SMALLINT
, O_ENTRY_D TIMESTAMP
, C_BALANCE DECIMAL(12,2)
, C_FIRST VARCHAR(16)
, C_MIDDLE CHAR(2)
, C_LAST VARCHAR(16)
)

SPECIFIC ORD_C_ID

READS SQL DATA NO EXTERNAL ACTION DETERMINISTIC LANGUAGE SQL

VAR: BEGIN ATOMIC

DECLARE C_BALANCE DECIMAL(12,2);
DECLARE C_FIRST VARCHAR(16);
DECLARE C_MIDDLE CHAR(2);
DECLARE C_LAST VARCHAR(16);
DECLARE O_ID INTEGER;
DECLARE O_CARRIER_ID SMALLINT;
DECLARE O_ENTRY_D TIMESTAMP;

/* Retrieve the Customer information */

SET ( C_BALANCE, C_FIRST, C_MIDDLE, C_LAST )

= ( SELECT C_BALANCE, C_FIRST, C_MIDDLE, C_LAST

FROM CUSTOMER

WHERE C_ID = ORD_C_ID.C_ID
AND C_W_ID = ORD_C_ID.W_ID
AND C_D_ID = ORD_C_ID.D_ID

)
;

SET ( O_ID, O_CARRIER_ID, O_ENTRY_D )

= ( SELECT O_ID
, O_CARRIER_ID
, O_ENTRY_D

FROM ORDERS

WHERE O_W_ID = ORD_C_ID.W_ID
AND O_D_ID = ORD_C_ID.D_ID
AND O_C_ID = ORD_C_ID.C_ID

ORDER BY O_ID DESC
FETCH FIRST 1 ROW ONLY

)
;

```

```

RETURN VALUES ( VAR.O_ID
, VAR.O_CARRIER_ID
, VAR.O_ENTRY_D
, VAR.C_BALANCE
, VAR.C_FIRST
, VAR.C_MIDDLE
, VAR.C_LAST
);

END
%

--
-- PAYMENT
--

CREATE FUNCTION PAY_C_LAST( W_ID INTEGER
, D_ID SMALLINT
, C_W_ID INTEGER
, C_D_ID SMALLINT
, C_LAST VARCHAR(16)
, H_AMOUNT DECIMAL(6,2)
, BAD_CREDIT_PREFIX VARCHAR(28)
)

RETURNS TABLE( W_STREET_1 CHAR(20)
, W_STREET_2 CHAR(20)
, W_CITY CHAR(20)
, W_STATE CHAR(2)
, W_ZIP CHAR(9)
, D_STREET_1 CHAR(20)
, D_STREET_2 CHAR(20)
, D_CITY CHAR(20)
, D_STATE CHAR(2)
, D_ZIP CHAR(9)
, C_ID INTEGER
, C_FIRST VARCHAR(16)
, C_MIDDLE CHAR(2)
, C_STREET_1 VARCHAR(20)
, C_STREET_2 VARCHAR(20)
, C_CITY VARCHAR(20)
, C_STATE CHAR(2)
, C_ZIP CHAR(9)
, C_PHONE CHAR(16)
, C_SINCE TIMESTAMP
, C_CREDIT CHAR(2)
, C_CREDIT_LIM DECIMAL(12,2)
, C_DISCOUNT INTEGER
, C_BALANCE DECIMAL(12,2)
, C_DATA CHAR(200)
, H_DATE TIMESTAMP
)

SPECIFIC PAY_C_LAST

MODIFIES SQL DATA DETERMINISTIC NO EXTERNAL ACTION LANGUAGE SQL

VAR: BEGIN ATOMIC

DECLARE W_NAME CHAR(10);
DECLARE D_NAME CHAR(10);

DECLARE W_STREET_1 CHAR(20);
DECLARE W_STREET_2 CHAR(20);
DECLARE W_CITY CHAR(20);
DECLARE W_STATE CHAR(2);
DECLARE W_ZIP CHAR(9);

```



```

DECLARE D_STREET_1 CHAR(20);
DECLARE D_STREET_2 CHAR(20);
DECLARE D_CITY CHAR(20);
DECLARE D_STATE CHAR(2);
DECLARE D_ZIP CHAR(9);

DECLARE C_ID INTEGER;

DECLARE C_FIRST VARCHAR(16);
DECLARE C_MIDDLE CHAR(2);
DECLARE C_STREET_1 VARCHAR(20);
DECLARE C_STREET_2 VARCHAR(20);
DECLARE C_CITY VARCHAR(20);
DECLARE C_STATE CHAR(2);
DECLARE C_ZIP CHAR(9);
DECLARE C_PHONE CHAR(16);
DECLARE C_SINCE TIMESTAMP;
DECLARE C_CREDIT CHAR(2);
DECLARE C_CREDIT_LIM DECIMAL(12,2);
DECLARE C_DISCOUNT INTEGER;
DECLARE C_BALANCE DECIMAL(12,2);
DECLARE C_DATA CHAR(200);

DECLARE H_DATE TIMESTAMP;

/* Generate the current date and time for the payment date */
SET H_DATE = CURRENT_TIMESTAMP;

/* Update District and retrieve its data */
SET ( D_NAME, D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP )
= ( SELECT D_NAME, D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP
    FROM OLD TABLE ( UPDATE DISTRICT
                     SET D_YTD = D_YTD + PAY_C_LAST.H_AMOUNT
                     WHERE D_W_ID = PAY_C_LAST.W_ID
                          AND D_ID = PAY_C_LAST.D_ID
                     ) AS U
    );

/* Determine the C_ID */
SET ( C_ID )
= ( SELECT C_ID
    FROM ( SELECT C_ID
          , COUNT(*) OVER() AS COUNT
          , ROWNUMBER() OVER (ORDER BY C_FIRST) AS NUM
          FROM CUSTOMER
          WHERE C_LAST = PAY_C_LAST.C_LAST
            AND C_W_ID = PAY_C_LAST.C_W_ID
            AND C_D_ID = PAY_C_LAST.C_D_ID
          ) AS T
    WHERE NUM = (COUNT + BIGINT( 1 )) / BIGINT( 2 )
    );

/* Update the middle customer */
SET ( C_ID, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
    , C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT, C_CREDIT_LIM
    , C_DISCOUNT, C_BALANCE, C_DATA )

```

```

= ( SELECT C_ID, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
    , C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT, C_CREDIT_LIM
    , C_DISCOUNT, C_BALANCE
    , CASE WHEN C_CREDIT = 'BC' THEN SUBSTR(C_DATA, 1, 200) ELSE NULL
    END AS C_DATA
    FROM NEW TABLE ( UPDATE CUSTOMER
                     SET C_BALANCE = C_BALANCE - PAY_C_LAST.H_AMOUNT
                       , C_YTD_PAYMENT = C_YTD_PAYMENT +
PAY_C_LAST.H_AMOUNT
                       , C_PAYMENT_CNT = C_PAYMENT_CNT + SMALLINT( 1 )
                       , C_DATA = CASE WHEN C_CREDIT = 'BC'
                                   THEN CHAR( C_ID ) -- 11 bytes long
                                   || BAD_CREDIT_PREFIX -- 28 bytes long
                                   || SUBSTR( C_DATA, 1, 461 ) -- 461 + 39 = 500
                                   ELSE C_DATA
                                   END
                     WHERE C_W_ID = PAY_C_LAST.C_W_ID
                       AND C_D_ID = PAY_C_LAST.C_D_ID
                       AND C_ID = VAR.C_ID
                     ) AS U
    );

/* Update the warehouse */
SET ( W_NAME, W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP )
= ( SELECT W_NAME, W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP
    FROM OLD TABLE ( UPDATE WAREHOUSE
                     SET W_YTD = W_YTD + PAY_C_LAST.H_AMOUNT
                     WHERE W_ID = PAY_C_LAST.W_ID
                     ) AS U
    );

/* Finally insert into the warehouse */
INSERT
    INTO HISTORY ( H_C_ID, H_C_D_ID, H_C_W_ID, H_D_ID, H_W_ID, H_DATA,
H_DATE, H_AMOUNT )
VALUES ( VAR.C_ID
    , PAY_C_LAST.C_D_ID
    , PAY_C_LAST.C_W_ID
    , PAY_C_LAST.D_ID
    , PAY_C_LAST.W_ID
    , VAR.W_NAME || CHAR(' ', 4) || VAR.D_NAME
    , VAR.H_DATE
    , PAY_C_LAST.H_AMOUNT
    );

/* Done - return the collected data */
RETURN VALUES ( W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP
    , D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP
    , C_ID, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
    , C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT,
C_CREDIT_LIM
    , C_DISCOUNT, C_BALANCE, C_DATA, H_DATE
    );

```

```

END
%
CREATE FUNCTION PAY_C_ID( W_ID INTEGER
    , D_ID SMALLINT
    , C_W_ID INTEGER
    , C_D_ID SMALLINT
    , C_ID INTEGER
    , H_AMOUNT DECIMAL(6,2)
    , BAD_CREDIT_PREFIX VARCHAR(34)
    )
RETURNS TABLE( W_STREET_1 CHAR(20)
    , W_STREET_2 CHAR(20)
    , W_CITY CHAR(20)
    , W_STATE CHAR(2)
    , W_ZIP CHAR(9)
    , D_STREET_1 CHAR(20)
    , D_STREET_2 CHAR(20)
    , D_CITY CHAR(20)
    , D_STATE CHAR(2)
    , D_ZIP CHAR(9)
    , C_LAST VARCHAR(16)
    , C_FIRST VARCHAR(16)
    , C_MIDDLE CHAR(2)
    , C_STREET_1 VARCHAR(20)
    , C_STREET_2 VARCHAR(20)
    , C_CITY VARCHAR(20)
    , C_STATE CHAR(2)
    , C_ZIP CHAR(9)
    , C_PHONE CHAR(16)
    , C_SINCE TIMESTAMP
    , C_CREDIT CHAR(2)
    , C_CREDIT_LIM DECIMAL(12,2)
    , C_DISCOUNT REAL
    , C_BALANCE DECIMAL(12,2)
    , C_DATA CHAR(200)
    , H_DATE TIMESTAMP
    )
SPECIFIC PAY_C_ID
MODIFIES SQL DATA DETERMINISTIC NO EXTERNAL ACTION LANGUAGE SQL
VAR: BEGIN ATOMIC
DECLARE W_NAME CHAR(10);
DECLARE D_NAME CHAR(10);

DECLARE W_STREET_1 CHAR(20);
DECLARE W_STREET_2 CHAR(20);
DECLARE W_CITY CHAR(20);
DECLARE W_STATE CHAR(2);
DECLARE W_ZIP CHAR(9);

DECLARE D_STREET_1 CHAR(20);
DECLARE D_STREET_2 CHAR(20);
DECLARE D_CITY CHAR(20);
DECLARE D_STATE CHAR(2);
DECLARE D_ZIP CHAR(9);

DECLARE C_LAST VARCHAR(16);
DECLARE C_FIRST VARCHAR(16);
DECLARE C_MIDDLE CHAR(2);
DECLARE C_STREET_1 VARCHAR(20);
DECLARE C_STREET_2 VARCHAR(20);
DECLARE C_CITY VARCHAR(20);
DECLARE C_STATE CHAR(2);
DECLARE C_ZIP CHAR(9);

```

```

DECLARE C_PHONE CHAR(16);
DECLARE C_SINCE TIMESTAMP;
DECLARE C_CREDIT CHAR(2);
DECLARE C_CREDIT_LIM DECIMAL(12,2);
DECLARE C_DISCOUNT REAL;
DECLARE C_BALANCE DECIMAL(12,2);
DECLARE C_DATA CHAR(200);
DECLARE H_DATE TIMESTAMP;

/* Generate the current date and time for the payment date */
SET H_DATE = CURRENT_TIMESTAMP;

/* Update District and retrieve its data */

SET ( D_NAME, D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP )
= ( SELECT D_NAME, D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP
    FROM OLD TABLE ( UPDATE DISTRICT
        SET D_YTD = D_YTD + PAY_C_ID.H_AMOUNT
        WHERE D_W_ID = PAY_C_ID.W_ID
        AND D_ID = PAY_C_ID.D_ID
    ) AS U
);

/* Update the middle customer */

SET ( C_LAST, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
    , C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT, C_CREDIT_LIM
    , C_DISCOUNT, C_BALANCE, C_DATA )
= ( SELECT C_LAST, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
    , C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT, C_CREDIT_LIM
    , C_DISCOUNT, C_BALANCE
    , CASE WHEN C_CREDIT = 'BC' THEN SUBSTR(C_DATA, 1, 200) ELSE NULL
END AS C_DATA
    FROM NEW TABLE ( UPDATE CUSTOMER
        SET C_BALANCE = C_BALANCE - PAY_C_ID.H_AMOUNT
        , C_YTD_PAYMENT = C_YTD_PAYMENT + PAY_C_ID.H_AMOUNT
        , C_PAYMENT_CNT = C_PAYMENT_CNT + SMALLINT( 1 )
        , C_DATA = CASE WHEN C_CREDIT = 'BC'
            THEN BAD_CREDIT_PREFIX -- 34 bytes long
            || SUBSTR( C_DATA, 1, 466 ) -- 466 + 34 = 500 bytes
            ELSE C_DATA
        END
        WHERE C_W_ID = PAY_C_ID.C_W_ID
        AND C_D_ID = PAY_C_ID.C_D_ID
        AND C_ID = PAY_C_ID.C_ID
    ) AS U
);

/* Update the warehouse */

SET ( W_NAME, W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP )
= ( SELECT W_NAME, W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP
    FROM OLD TABLE ( UPDATE WAREHOUSE
        SET W_YTD = W_YTD + PAY_C_ID.H_AMOUNT
        WHERE W_ID = PAY_C_ID.W_ID

```

```

    ) AS U
);

/* Finally insert into the warehouse */

INSERT
    INTO HISTORY ( H_C_ID, H_C_D_ID, H_C_W_ID, H_D_ID, H_W_ID, H_DATA,
    H_DATE, H_AMOUNT )
VALUES ( PAY_C_ID.C_ID
    , PAY_C_ID.C_D_ID
    , PAY_C_ID.C_W_ID
    , PAY_C_ID.D_ID
    , PAY_C_ID.W_ID
    , VAR.W_NAME || CHAR( ' ', 4 ) || VAR.D_NAME
    , VAR.H_DATE
    , PAY_C_ID.H_AMOUNT
);

/* Done - return the collected data */

RETURN VALUES ( W_STREET_1, W_STREET_2, W_CITY, W_STATE, W_ZIP
    , D_STREET_1, D_STREET_2, D_CITY, D_STATE, D_ZIP
    , C_LAST, C_FIRST, C_MIDDLE, C_STREET_1, C_STREET_2
    , C_CITY, C_STATE, C_ZIP, C_PHONE, C_SINCE, C_CREDIT,
    C_CREDIT_LIM
    , C_DISCOUNT, C_BALANCE, C_DATA, H_DATE
);

END
%
-- NEW ORDER
--

CREATE FUNCTION NEW_OL_ALL( I_ID INT
    , I_QTY SMALLINT
    , W_ID INT
    , SUPP_W_ID INT
    , O_ID INT
    , D_ID SMALLINT
)
RETURNS TABLE( I_PRICE DECIMAL(5,2)
    , I_NAME CHAR(24)
    , I_DATA VARCHAR(50)
    , OL_DIST_INFO CHAR(24)
    , S_DATA VARCHAR(50)
    , S_QUANTITY SMALLINT
)
SPECIFIC NEW_OL_ALL
MODIFIES SQL DATA DETERMINISTIC NO EXTERNAL ACTION LANGUAGE SQL

VAR: BEGIN ATOMIC

DECLARE I_PRICE DECIMAL(5,2);
DECLARE I_NAME CHAR(24);
DECLARE I_DATA VARCHAR(50);
DECLARE OL_DIST_INFO CHAR(24);
DECLARE S_DATA VARCHAR(50);
DECLARE S_QUANTITY SMALLINT;

```

```

SET ( I_PRICE, I_NAME, I_DATA )
= ( SELECT
    I_PRICE
    , I_NAME
    , I_DATA
    FROM ITEM
    WHERE ITEM.I_ID = NEW_OL_ALL.I_ID
);

SET ( OL_DIST_INFO, S_DATA, S_QUANTITY )
= ( SELECT OL_DIST_INFO
    , S_DATA
    , S_QUANTITY
    FROM NEW TABLE ( UPDATE STOCK
        INCLUDE ( OL_DIST_INFO CHAR( 24 ) )
        SET S_QUANTITY = CASE WHEN S_QUANTITY -
NEW_OL_ALL.I_QTY >= 10
            THEN S_QUANTITY - NEW_OL_ALL.I_QTY
            ELSE S_QUANTITY - NEW_OL_ALL.I_QTY + 91
        END
        , S_ORDER_CNT = S_ORDER_CNT + SMALLINT( 1 )
        , S_YTD = S_YTD + NEW_OL_ALL.I_QTY
        , S_REMOTE_CNT = CASE WHEN
NEW_OL_ALL.SUPP_W_ID = NEW_OL_ALL.W_ID
            THEN S_REMOTE_CNT
            ELSE S_REMOTE_CNT + SMALLINT( 1 )
        END
        , OL_DIST_INFO = CASE D_ID WHEN SMALLINT( 1 )
            WHEN SMALLINT( 2 ) THEN
S_DIST_02
            WHEN SMALLINT( 3 ) THEN
S_DIST_03
            WHEN SMALLINT( 4 ) THEN
S_DIST_04
            WHEN SMALLINT( 5 ) THEN
S_DIST_05
            WHEN SMALLINT( 6 ) THEN
S_DIST_06
            WHEN SMALLINT( 7 ) THEN
S_DIST_07
            WHEN SMALLINT( 8 ) THEN
S_DIST_08
            WHEN SMALLINT( 9 ) THEN
S_DIST_09
            WHEN SMALLINT( 10 ) THEN
S_DIST_10
        END
        WHERE S_I_ID = NEW_OL_ALL.I_ID
        AND S_W_ID = NEW_OL_ALL.SUPP_W_ID
    ) AS U
);

RETURN VALUES( VAR.I_PRICE
    , VAR.I_NAME
    , VAR.I_DATA
    , VAR.OL_DIST_INFO
    , VAR.S_DATA

```

```

        , VAR.S_QUANTITY
    )
;
END
%

CREATE FUNCTION NEW_OL_LOCAL( I_ID INT
    , I_QTY SMALLINT
    , W_ID INT
    , O_ID INT
    , D_ID SMALLINT
)

RETURNS TABLE( I_PRICE DECIMAL(5,2)
    , I_NAME CHAR(24)
    , I_DATA VARCHAR(50)
    , OL_DIST_INFO CHAR(24)
    , S_DATA VARCHAR(50)
    , S_QUANTITY SMALLINT
)

SPECIFIC NEW_OL_LOCAL

MODIFIES SQL DATA DETERMINISTIC NO EXTERNAL ACTION LANGUAGE SQL

VAR: BEGIN ATOMIC

DECLARE I_PRICE DECIMAL(5,2) ;
DECLARE I_NAME CHAR(24) ;
DECLARE I_DATA VARCHAR(50) ;
DECLARE OL_DIST_INFO CHAR(24) ;
DECLARE S_DATA VARCHAR(50) ;
DECLARE S_QUANTITY SMALLINT ;

SET ( I_PRICE , I_NAME , I_DATA )
= ( SELECT
    I_PRICE
    , I_NAME
    , I_DATA
    FROM ITEM
    WHERE ITEM.I_ID = NEW_OL_LOCAL.I_ID
);

SET ( OL_DIST_INFO , S_DATA , S_QUANTITY )
= ( SELECT OL_DIST_INFO
    , S_DATA
    , S_QUANTITY
    FROM NEW TABLE ( UPDATE STOCK
        INCLUDE ( OL_DIST_INFO CHAR( 24 ) )
        SET S_QUANTITY = CASE WHEN S_QUANTITY -
NEW_OL_LOCAL.I_QTY >= 10
            THEN S_QUANTITY - NEW_OL_LOCAL.I_QTY
            ELSE S_QUANTITY - NEW_OL_LOCAL.I_QTY + 91
        END
    , S_ORDER_CNT = S_ORDER_CNT + SMALLINT( 1 )
    , S_YTD = S_YTD + NEW_OL_LOCAL.I_QTY
    , OL_DIST_INFO = CASE D_ID WHEN SMALLINT( 1 )

```

```

        WHEN SMALLINT( 2 ) THEN
        S_DIST_02
        WHEN SMALLINT( 3 ) THEN
        S_DIST_03
        WHEN SMALLINT( 4 ) THEN
        S_DIST_04
        WHEN SMALLINT( 5 ) THEN
        S_DIST_05
        WHEN SMALLINT( 6 ) THEN
        S_DIST_06
        WHEN SMALLINT( 7 ) THEN
        S_DIST_07
        WHEN SMALLINT( 8 ) THEN
        S_DIST_08
        WHEN SMALLINT( 9 ) THEN
        S_DIST_09
        WHEN SMALLINT( 10 ) THEN
        S_DIST_10
    END
    WHERE S_I_ID = NEW_OL_LOCAL.I_ID
    AND S_W_ID = NEW_OL_LOCAL.W_ID
) AS U
)
;

RETURN VALUES( VAR.I_PRICE
    , VAR.I_NAME
    , VAR.I_DATA
    , VAR.OL_DIST_INFO
    , VAR.S_DATA
    , VAR.S_QUANTITY
)
;

END
%

CREATE FUNCTION NEW_WH ( O_ID INTEGER
    , W_ID INTEGER
    , D_ID SMALLINT
    , C_ID INTEGER
    , O_OL_CNT SMALLINT
    , O_ALL_LOCAL SMALLINT
)

RETURNS TABLE ( W_TAX REAL
    , C_DISCOUNT REAL
    , C_LAST VARCHAR(16)
    , C_CREDIT CHAR(2)
    , O_ENTRY_D TIMESTAMP
)

SPECIFIC NEW_WH

MODIFIES SQL DATA DETERMINISTIC NO EXTERNAL ACTION LANGUAGE SQL

VAR: BEGIN ATOMIC

DECLARE C_DISCOUNT REAL ;
DECLARE C_LAST VARCHAR(16) ;
DECLARE C_CREDIT CHAR(2) ;
DECLARE W_TAX REAL ;
DECLARE O_ENTRY_D TIMESTAMP ;

SET O_ENTRY_D = CURRENT_TIMESTAMP ;

INSERT
    INTO NEW_ORDER ( NO_O_ID, NO_D_ID, NO_W_ID )

```

```

        VALUES ( O_ID
    , D_ID
    , W_ID
    )
;

INSERT
    INTO ORDERS ( O_C_ID, O_ENTRY_D, O_CARRIER_ID, O_OL_CNT, O_ALL_LOCAL
    O_ID, O_W_ID, O_D_ID )
        VALUES ( C_ID
    , O_ENTRY_D
    , 0
    , O_OL_CNT
    , O_ALL_LOCAL
    , O_ID
    , W_ID
    , D_ID
    )
;

SET ( C_DISCOUNT, C_LAST, C_CREDIT )
= ( SELECT C_DISCOUNT, C_LAST, C_CREDIT
    FROM CUSTOMER
    WHERE C_ID = NEW_WH.C_ID
    AND C_W_ID = W_ID
    AND C_D_ID = D_ID
)
;

SET W_TAX
= ( SELECT W_TAX
    FROM WAREHOUSE
    WHERE W_ID = NEW_WH.W_ID
)
;

RETURN VALUES ( W_TAX , C_DISCOUNT , C_LAST , C_CREDIT, O_ENTRY_D );

END
%

Src.Srv/cat-proc.ddl

CREATE PROCEDURE news
    (in new_in varchar(262) FOR BIT DATA,
    out new_out varchar(682) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE GENERAL
EXTERNAL NAME '/home/tpcc/sql/lib/function/news!news'
not fenced;

CREATE PROCEDURE ords
    (in ord_in varchar(42) FOR BIT DATA,
    out ord_out varchar(822) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE GENERAL
EXTERNAL NAME '/home/tpcc/sql/lib/function/ords!ords'
not fenced;

CREATE PROCEDURE dels
    (in del_in varchar(14) FOR BIT DATA,

```

```

out del_out varchar(50) FOR BIT DATA)
LANGUAGE C
PARAMETER STYLE GENERAL
EXTERNAL NAME '/home/tpcc/sqllib/function/dels!dels'
not fenced;

```

Src.Srv/tpcc all sql.sqc

```

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*****/

/*
 * tpcc_all_sql.sqc - Client/Server code for TPCC
 */

#include <stdlib.h>
#include <errno.h>
#include "db2tpcc.h"
#include "tpccapp.h"
#include "tpccdbg.h"

#include "sqlca.h"
#include "sql.h"

// -----
// New Order SERVER
// -----

int static is_ORIGINAL( char *string, short length );

SQL_API_RC new_order_internal( char *pin, char *pout )
{
    struct out_neword_struct *neword;

    struct in_neword_struct *in_neword;

    struct sqlca sqlca ;

    int fbadItemDetected = 0 ;

    EXEC SQL BEGIN DECLARE SECTION;

    char c_last [ 16 ];
    char c_credit [ 2 ];
    float c_discount ;
    float dist_tax ;
    float ware_tax ;

    sqlint32 w_id ;
    short d_id ;
    sqlint32 c_id ;

    sqlint32 next_o_id ;

    short s_quantity ;

    sqlint32 supply_w_id ;

```

```

short inputItemCount ;

char stockDistrictInformation [ 24 ];
char item_name[ 24 ];

char o_entry_d [27];

short allLocal ;

float item_price ;

struct i_data_type { short len ; char data[ 50 ] ; } i_data ;
struct s_data_type { short len ; char data[ 50 ] ; } s_data ;

sqlint32 id0, id1, id2, id3, id4, id5, id6, id7;
sqlint32 id8, id9, id10, id11, id12, id13, id14;

sqlint32 supply_w_id0, supply_w_id1, supply_w_id2, supply_w_id3;
sqlint32 supply_w_id4, supply_w_id5, supply_w_id6, supply_w_id7;
sqlint32 supply_w_id8, supply_w_id9, supply_w_id10, supply_w_id11;
sqlint32 supply_w_id12, supply_w_id13, supply_w_id14;

short ol_quantity0, ol_quantity1, ol_quantity2, ol_quantity3;
short ol_quantity4, ol_quantity5, ol_quantity6, ol_quantity7;
short ol_quantity8, ol_quantity9, ol_quantity10, ol_quantity11;
short ol_quantity12, ol_quantity13, ol_quantity14;

EXEC SQL END DECLARE SECTION;

int storedProcRc ;
int inputItemArrayIndex ;

char stockDistrictInformationArray [15][25];

#define stockDistrictInformation stockDistrictInformationArray[ inputItemArrayIndex ]

// Redirected input fields

#define w_id in_neword->s_W_ID
#define d_id in_neword->s_D_ID
#define c_id in_neword->s_C_ID

#define inputItemCount in_neword->s_O_OL_CNT

#define allLocal in_neword->s_all_local

// Redirected output fields

#define c_last neword->s_C_LAST
#define c_credit neword->s_C_CREDIT
#define c_discount neword->s_C_DISCOUNT
#define ware_tax neword->s_W_TAX
#define dist_tax neword->s_D_TAX
#define s_quantity neword->item[ inputItemArrayIndex ].s_S_QUANTITY
#define o_entry_d neword->s_O_ENTRY_D_time

// This output field becomes an input field to order_line

#define next_o_id neword->s_O_ID

// item price/name

#define item_name neword->item[ inputItemArrayIndex ].s_I_NAME

float i_priceArray[ 15 ];

#define item_price i_priceArray[ inputItemArrayIndex ]

```

```

// Handle the generic/brand distinction

struct i_data_type i_dataArray[ 15 ];
struct s_data_type s_dataArray[ 15 ];

#define i_data i_dataArray[ inputItemArrayIndex ]
#define s_data s_dataArray[ inputItemArrayIndex ]

// Redirect hostvars to input structure

#define id0 in_neword->in_item[0].s_OL_I_ID
#define id1 in_neword->in_item[1].s_OL_I_ID
#define id2 in_neword->in_item[2].s_OL_I_ID
#define id3 in_neword->in_item[3].s_OL_I_ID
#define id4 in_neword->in_item[4].s_OL_I_ID
#define id5 in_neword->in_item[5].s_OL_I_ID
#define id6 in_neword->in_item[6].s_OL_I_ID
#define id7 in_neword->in_item[7].s_OL_I_ID
#define id8 in_neword->in_item[8].s_OL_I_ID
#define id9 in_neword->in_item[9].s_OL_I_ID
#define id10 in_neword->in_item[10].s_OL_I_ID
#define id11 in_neword->in_item[11].s_OL_I_ID
#define id12 in_neword->in_item[12].s_OL_I_ID
#define id13 in_neword->in_item[13].s_OL_I_ID
#define id14 in_neword->in_item[14].s_OL_I_ID

#define ol_quantity0 in_neword->in_item[ 0 ].s_OL_QUANTITY
#define ol_quantity1 in_neword->in_item[ 1 ].s_OL_QUANTITY
#define ol_quantity2 in_neword->in_item[ 2 ].s_OL_QUANTITY
#define ol_quantity3 in_neword->in_item[ 3 ].s_OL_QUANTITY
#define ol_quantity4 in_neword->in_item[ 4 ].s_OL_QUANTITY
#define ol_quantity5 in_neword->in_item[ 5 ].s_OL_QUANTITY
#define ol_quantity6 in_neword->in_item[ 6 ].s_OL_QUANTITY
#define ol_quantity7 in_neword->in_item[ 7 ].s_OL_QUANTITY
#define ol_quantity8 in_neword->in_item[ 8 ].s_OL_QUANTITY
#define ol_quantity9 in_neword->in_item[ 9 ].s_OL_QUANTITY
#define ol_quantity10 in_neword->in_item[ 10 ].s_OL_QUANTITY
#define ol_quantity11 in_neword->in_item[ 11 ].s_OL_QUANTITY
#define ol_quantity12 in_neword->in_item[ 12 ].s_OL_QUANTITY
#define ol_quantity13 in_neword->in_item[ 13 ].s_OL_QUANTITY
#define ol_quantity14 in_neword->in_item[ 14 ].s_OL_QUANTITY

#define supply_w_id0 in_neword->in_item[ 0 ].s_OL_SUPPLY_W_ID
#define supply_w_id1 in_neword->in_item[ 1 ].s_OL_SUPPLY_W_ID
#define supply_w_id2 in_neword->in_item[ 2 ].s_OL_SUPPLY_W_ID
#define supply_w_id3 in_neword->in_item[ 3 ].s_OL_SUPPLY_W_ID
#define supply_w_id4 in_neword->in_item[ 4 ].s_OL_SUPPLY_W_ID
#define supply_w_id5 in_neword->in_item[ 5 ].s_OL_SUPPLY_W_ID
#define supply_w_id6 in_neword->in_item[ 6 ].s_OL_SUPPLY_W_ID
#define supply_w_id7 in_neword->in_item[ 7 ].s_OL_SUPPLY_W_ID
#define supply_w_id8 in_neword->in_item[ 8 ].s_OL_SUPPLY_W_ID
#define supply_w_id9 in_neword->in_item[ 9 ].s_OL_SUPPLY_W_ID
#define supply_w_id10 in_neword->in_item[ 10 ].s_OL_SUPPLY_W_ID
#define supply_w_id11 in_neword->in_item[ 11 ].s_OL_SUPPLY_W_ID
#define supply_w_id12 in_neword->in_item[ 12 ].s_OL_SUPPLY_W_ID
#define supply_w_id13 in_neword->in_item[ 13 ].s_OL_SUPPLY_W_ID
#define supply_w_id14 in_neword->in_item[ 14 ].s_OL_SUPPLY_W_ID

EXEC SQL DECLARE ISOL_Remote_1 CURSOR FOR

WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, ( I_PRICE * I_QTY ) AS TOTAL_PRICE
, OL_DIST_INFO

```

```

, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )
) AS X ( OL_NUMBER, I_ID, I_QTY
, I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE, I_NAME, I_DATA, OL_DIST_INFO, S_DATA, S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;

```

```

EXEC SQL DECLARE ISOL_Remote_2 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )
( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )
) AS X ( OL_NUMBER, I_ID, I_QTY
, I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE, I_NAME, I_DATA, OL_DIST_INFO, S_DATA, S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID

```

```

, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Remote_3 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
) AS X ( OL_NUMBER, I_ID, I_QTY
, I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE, I_NAME, I_DATA, OL_DIST_INFO, S_DATA, S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID

```

```

, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)

INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )

SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM DATA

) AS INS
;

EXEC SQL DECLARE ISOL_Remote_4 CURSOR FOR

WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY

FROM Table( VALUES

( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )

( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )

( SMALLINT( 3 ) , :id2 , :ol_quantity2 , :supply_w_id2 )

( SMALLINT( 4 ) , :id3 , :ol_quantity3 , :supply_w_id3 )

( SMALLINT( 5 ) , :id4 , :ol_quantity4 , :supply_w_id4 )

) AS X ( OL_NUMBER , I_ID , I_QTY
, I_SUPPLY_W_ID )

) AS ITEMLIST

)
;

EXEC SQL DECLARE ISOL_Remote_4 CURSOR FOR

WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY

FROM Table( VALUES

( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )

( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )

( SMALLINT( 3 ) , :id2 , :ol_quantity2 , :supply_w_id2 )

( SMALLINT( 4 ) , :id3 , :ol_quantity3 , :supply_w_id3 )

( SMALLINT( 5 ) , :id4 , :ol_quantity4 , :supply_w_id4 )

) AS X ( OL_NUMBER , I_ID , I_QTY
, I_SUPPLY_W_ID )

) AS ITEMLIST

```

```

, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL

WHERE NEW_OL_ALL.I_PRICE IS NOT NULL

)

SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY

FROM NEW TABLE ( INSERT INTO ORDER_LINE

( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)

INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )

SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM DATA

) AS INS
;

EXEC SQL DECLARE ISOL_Remote_5 CURSOR FOR

WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY

FROM Table( VALUES

( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )

( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )

( SMALLINT( 3 ) , :id2 , :ol_quantity2 , :supply_w_id2 )

( SMALLINT( 4 ) , :id3 , :ol_quantity3 , :supply_w_id3 )

( SMALLINT( 5 ) , :id4 , :ol_quantity4 , :supply_w_id4 )

) AS X ( OL_NUMBER , I_ID , I_QTY
, I_SUPPLY_W_ID )

) AS ITEMLIST

```

```

, I_ID
, I_SUPPLY_W_ID
, I_QTY

FROM Table( VALUES

( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )

( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )

( SMALLINT( 3 ) , :id2 , :ol_quantity2 , :supply_w_id2 )

( SMALLINT( 4 ) , :id3 , :ol_quantity3 , :supply_w_id3 )

( SMALLINT( 5 ) , :id4 , :ol_quantity4 , :supply_w_id4 )

) AS X ( OL_NUMBER , I_ID , I_QTY
, I_SUPPLY_W_ID )

) AS ITEMLIST

, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL

WHERE NEW_OL_ALL.I_PRICE IS NOT NULL

)

SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY

FROM NEW TABLE ( INSERT INTO ORDER_LINE

( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)

INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )

SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM DATA

) AS INS
;

EXEC SQL DECLARE ISOL_Remote_5 CURSOR FOR

WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY

FROM Table( VALUES

( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )

( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )

( SMALLINT( 3 ) , :id2 , :ol_quantity2 , :supply_w_id2 )

( SMALLINT( 4 ) , :id3 , :ol_quantity3 , :supply_w_id3 )

( SMALLINT( 5 ) , :id4 , :ol_quantity4 , :supply_w_id4 )

) AS X ( OL_NUMBER , I_ID , I_QTY
, I_SUPPLY_W_ID )

) AS ITEMLIST

```

```

) AS INS
;
EXEC SQL DECLARE ISOL_Remote_6 CURSOR FOR
WITH DATA AS ( SELECT O_ID
,D_ID
,W_ID
,OL_NUMBER
,I_ID
,I_SUPPLY_W_ID
,(TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
,I_QTY
,(I_PRICE * I_QTY) AS TOTAL_PRICE
,OL_DIST_INFO
,I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
,:w_id AS W_ID
,:d_id as D_ID
,OL_NUMBER
,I_ID
,I_SUPPLY_W_ID
,I_QTY
FROM Table( VALUES
( SMALLINT( 1) ,:id0 ,:ol_quantity0 ,:supply_w_id0 )
( SMALLINT( 2) ,:id1 ,:ol_quantity1 ,:supply_w_id1 )
( SMALLINT( 3) ,:id2 ,:ol_quantity2 ,:supply_w_id2 )
( SMALLINT( 4) ,:id3 ,:ol_quantity3 ,:supply_w_id3 )
( SMALLINT( 5) ,:id4 ,:ol_quantity4 ,:supply_w_id4 )
( SMALLINT( 6) ,:id5 ,:ol_quantity5 ,:supply_w_id5 )
) AS X ( OL_NUMBER , I_ID , I_QTY
,I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
,I_QTY
,W_ID
,I_SUPPLY_W_ID
,O_ID
,D_ID
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
,OL_D_ID
,OL_W_ID
,OL_NUMBER
,OL_I_ID
,OL_SUPPLY_W_ID
,OL_DELIVERY_D
,OL_QUANTITY
,OL_AMOUNT
,OL_DIST_INFO

```

```

,OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
,I_NAME CHAR(24)
,I_DATA VARCHAR(50)
,S_DATA VARCHAR(50)
,S_QUANTITY SMALLINT )
SELECT O_ID
,D_ID
,W_ID
,OL_NUMBER
,I_ID
,I_SUPPLY_W_ID
,OL_DELIVERY_D
,I_QTY
,TOTAL_PRICE
,OL_DIST_INFO
,I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Remote_7 CURSOR FOR
WITH DATA AS ( SELECT O_ID
,D_ID
,W_ID
,OL_NUMBER
,I_ID
,I_SUPPLY_W_ID
,(TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
,I_QTY
,(I_PRICE * I_QTY) AS TOTAL_PRICE
,OL_DIST_INFO
,I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
,:w_id AS W_ID
,:d_id as D_ID
,OL_NUMBER
,I_ID
,I_SUPPLY_W_ID
,I_QTY
FROM Table( VALUES
( SMALLINT( 1) ,:id0 ,:ol_quantity0 ,:supply_w_id0 )
( SMALLINT( 2) ,:id1 ,:ol_quantity1 ,:supply_w_id1 )
( SMALLINT( 3) ,:id2 ,:ol_quantity2 ,:supply_w_id2 )
( SMALLINT( 4) ,:id3 ,:ol_quantity3 ,:supply_w_id3 )
( SMALLINT( 5) ,:id4 ,:ol_quantity4 ,:supply_w_id4 )
( SMALLINT( 6) ,:id5 ,:ol_quantity5 ,:supply_w_id5 )
( SMALLINT( 7) ,:id6 ,:ol_quantity6 ,:supply_w_id6 )
) AS X ( OL_NUMBER , I_ID , I_QTY
,I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID

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,I_QTY
,W_ID
,I_SUPPLY_W_ID
,O_ID
,D_ID
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
,OL_D_ID
,OL_W_ID
,OL_NUMBER
,OL_I_ID
,OL_SUPPLY_W_ID
,OL_DELIVERY_D
,OL_QUANTITY
,OL_AMOUNT
,OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
,I_NAME CHAR(24)
,I_DATA VARCHAR(50)
,S_DATA VARCHAR(50)
,S_QUANTITY SMALLINT )
SELECT O_ID
,D_ID
,W_ID
,OL_NUMBER
,I_ID
,I_SUPPLY_W_ID
,OL_DELIVERY_D
,I_QTY
,TOTAL_PRICE
,OL_DIST_INFO
,I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Remote_8 CURSOR FOR
WITH DATA AS ( SELECT O_ID
,D_ID
,W_ID
,OL_NUMBER
,I_ID
,I_SUPPLY_W_ID
,(TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
,I_QTY
,(I_PRICE * I_QTY) AS TOTAL_PRICE
,OL_DIST_INFO
,I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
,:w_id AS W_ID
,:d_id as D_ID
,OL_NUMBER
,I_ID

```

```

        , I_SUPPLY_W_ID
        , I_QTY
    FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )
( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )
( SMALLINT( 3 ) , :id2 , :ol_quantity2 , :supply_w_id2 )
( SMALLINT( 4 ) , :id3 , :ol_quantity3 , :supply_w_id3 )
( SMALLINT( 5 ) , :id4 , :ol_quantity4 , :supply_w_id4 )
( SMALLINT( 6 ) , :id5 , :ol_quantity5 , :supply_w_id5 )
( SMALLINT( 7 ) , :id6 , :ol_quantity6 , :supply_w_id6 )
( SMALLINT( 8 ) , :id7 , :ol_quantity7 , :supply_w_id7 )
    ) AS X ( OL_NUMBER , I_ID , I_QTY
I_SUPPLY_W_ID )
    ) AS ITEMLIST
    , TABLE( NEW_OL_ALL( I_ID
        , I_QTY
        , W_ID
        , I_SUPPLY_W_ID
        , O_ID
        , D_ID
    )
    ) AS NEW_OL_ALL
    WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE

```

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        , OL_DIST_INFO
        , I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
    FROM DATA
    ) AS INS
;
EXEC SQL DECLARE ISOL_Remote_9 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )
( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )
( SMALLINT( 3 ) , :id2 , :ol_quantity2 , :supply_w_id2 )
( SMALLINT( 4 ) , :id3 , :ol_quantity3 , :supply_w_id3 )
( SMALLINT( 5 ) , :id4 , :ol_quantity4 , :supply_w_id4 )
( SMALLINT( 6 ) , :id5 , :ol_quantity5 , :supply_w_id5 )
( SMALLINT( 7 ) , :id6 , :ol_quantity6 , :supply_w_id6 )
( SMALLINT( 8 ) , :id7 , :ol_quantity7 , :supply_w_id7 )
( SMALLINT( 9 ) , :id8 , :ol_quantity8 , :supply_w_id8 )
    ) AS X ( OL_NUMBER , I_ID , I_QTY
I_SUPPLY_W_ID )
    ) AS ITEMLIST
    , TABLE( NEW_OL_ALL( I_ID
        , I_QTY
        , W_ID
        , I_SUPPLY_W_ID
        , O_ID
        , D_ID
    )
    ) AS NEW_OL_ALL
    WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY

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FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Remote_10 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 , :supply_w_id0 )
( SMALLINT( 2 ) , :id1 , :ol_quantity1 , :supply_w_id1 )
( SMALLINT( 3 ) , :id2 , :ol_quantity2 , :supply_w_id2 )
( SMALLINT( 4 ) , :id3 , :ol_quantity3 , :supply_w_id3 )

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( SMALLINT( 5 ) ,:id4 ,:ol_quantity4 ,:supply_w_id4 )
( SMALLINT( 6 ) ,:id5 ,:ol_quantity5 ,:supply_w_id5 )
( SMALLINT( 7 ) ,:id6 ,:ol_quantity6 ,:supply_w_id6 )
( SMALLINT( 8 ) ,:id7 ,:ol_quantity7 ,:supply_w_id7 )
( SMALLINT( 9 ) ,:id8 ,:ol_quantity8 ,:supply_w_id8 )
( SMALLINT( 10 ) ,:id9 ,:ol_quantity9 ,:supply_w_id9 )

) AS X ( OL_NUMBER , I_ID , I_QTY
I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)

SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE

( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)

INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )

SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM DATA

) AS INS
;

EXEC SQL DECLARE ISOL_Remote_11 CURSOR FOR

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WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY

FROM Table( VALUES

( SMALLINT( 1 ) ,:id0 ,:ol_quantity0 ,:supply_w_id0 )
( SMALLINT( 2 ) ,:id1 ,:ol_quantity1 ,:supply_w_id1 )
( SMALLINT( 3 ) ,:id2 ,:ol_quantity2 ,:supply_w_id2 )
( SMALLINT( 4 ) ,:id3 ,:ol_quantity3 ,:supply_w_id3 )
( SMALLINT( 5 ) ,:id4 ,:ol_quantity4 ,:supply_w_id4 )
( SMALLINT( 6 ) ,:id5 ,:ol_quantity5 ,:supply_w_id5 )
( SMALLINT( 7 ) ,:id6 ,:ol_quantity6 ,:supply_w_id6 )
( SMALLINT( 8 ) ,:id7 ,:ol_quantity7 ,:supply_w_id7 )
( SMALLINT( 9 ) ,:id8 ,:ol_quantity8 ,:supply_w_id8 )
( SMALLINT( 10 ) ,:id9 ,:ol_quantity9 ,:supply_w_id9 )
( SMALLINT( 11 ) ,:id10 ,:ol_quantity10 ,:supply_w_id10 )

) AS X ( OL_NUMBER , I_ID , I_QTY
I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL

SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE

( OL_O_ID
, OL_D_ID
, OL_W_ID

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, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)

INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )

SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM DATA

) AS INS
;

EXEC SQL DECLARE ISOL_Remote_12 CURSOR FOR

WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY

FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY

FROM Table( VALUES

( SMALLINT( 1 ) ,:id0 ,:ol_quantity0 ,:supply_w_id0 )
( SMALLINT( 2 ) ,:id1 ,:ol_quantity1 ,:supply_w_id1 )
( SMALLINT( 3 ) ,:id2 ,:ol_quantity2 ,:supply_w_id2 )
( SMALLINT( 4 ) ,:id3 ,:ol_quantity3 ,:supply_w_id3 )
( SMALLINT( 5 ) ,:id4 ,:ol_quantity4 ,:supply_w_id4 )
( SMALLINT( 6 ) ,:id5 ,:ol_quantity5 ,:supply_w_id5 )
( SMALLINT( 7 ) ,:id6 ,:ol_quantity6 ,:supply_w_id6 )

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( SMALLINT( 8 ) ,:id7 ,:ol_quantity7 ,:supply_w_id7 )
( SMALLINT( 9 ) ,:id8 ,:ol_quantity8 ,:supply_w_id8 )
( SMALLINT( 10 ) ,:id9 ,:ol_quantity9 ,:supply_w_id9 )
( SMALLINT( 11 ) ,:id10 ,:ol_quantity10 ,:supply_w_id10 )
( SMALLINT( 12 ) ,:id11 ,:ol_quantity11 ,:supply_w_id11 )

) AS X ( OL_NUMBER , I_ID , I_QTY
, I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)

SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Remote_13 CURSOR FOR
WITH DATA AS ( SELECT O_ID

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, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
)
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) ,:id0 ,:ol_quantity0 ,:supply_w_id0 )
( SMALLINT( 2 ) ,:id1 ,:ol_quantity1 ,:supply_w_id1 )
( SMALLINT( 3 ) ,:id2 ,:ol_quantity2 ,:supply_w_id2 )
( SMALLINT( 4 ) ,:id3 ,:ol_quantity3 ,:supply_w_id3 )
( SMALLINT( 5 ) ,:id4 ,:ol_quantity4 ,:supply_w_id4 )
( SMALLINT( 6 ) ,:id5 ,:ol_quantity5 ,:supply_w_id5 )
( SMALLINT( 7 ) ,:id6 ,:ol_quantity6 ,:supply_w_id6 )
( SMALLINT( 8 ) ,:id7 ,:ol_quantity7 ,:supply_w_id7 )
( SMALLINT( 9 ) ,:id8 ,:ol_quantity8 ,:supply_w_id8 )
( SMALLINT( 10 ) ,:id9 ,:ol_quantity9 ,:supply_w_id9 )
( SMALLINT( 11 ) ,:id10 ,:ol_quantity10 ,:supply_w_id10 )
( SMALLINT( 12 ) ,:id11 ,:ol_quantity11 ,:supply_w_id11 )
( SMALLINT( 13 ) ,:id12 ,:ol_quantity12 ,:supply_w_id12 )
)
) AS X ( OL_NUMBER , I_ID , I_QTY
, I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)

SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID

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, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Remote_14 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
)
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) ,:id0 ,:ol_quantity0 ,:supply_w_id0 )
( SMALLINT( 2 ) ,:id1 ,:ol_quantity1 ,:supply_w_id1 )
( SMALLINT( 3 ) ,:id2 ,:ol_quantity2 ,:supply_w_id2 )
( SMALLINT( 4 ) ,:id3 ,:ol_quantity3 ,:supply_w_id3 )
( SMALLINT( 5 ) ,:id4 ,:ol_quantity4 ,:supply_w_id4 )
( SMALLINT( 6 ) ,:id5 ,:ol_quantity5 ,:supply_w_id5 )

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( SMALLINT( 7 ) ,:id6 ,:ol_quantity6 ,:supply_w_id6 )
( SMALLINT( 8 ) ,:id7 ,:ol_quantity7 ,:supply_w_id7 )
( SMALLINT( 9 ) ,:id8 ,:ol_quantity8 ,:supply_w_id8 )
( SMALLINT( 10 ) ,:id9 ,:ol_quantity9 ,:supply_w_id9 )
( SMALLINT( 11 ) ,:id10 ,:ol_quantity10 ,:supply_w_id10 )
( SMALLINT( 12 ) ,:id11 ,:ol_quantity11 ,:supply_w_id11 )
( SMALLINT( 13 ) ,:id12 ,:ol_quantity12 ,:supply_w_id12 )
( SMALLINT( 14 ) ,:id13 ,:ol_quantity13 ,:supply_w_id13 )
) AS X ( OL_NUMBER , I_ID , I_QTY
I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA

```

```

) AS INS
;
EXEC SQL DECLARE ISOL_Remote_15 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) ,:id0 ,:ol_quantity0 ,:supply_w_id0 )
( SMALLINT( 2 ) ,:id1 ,:ol_quantity1 ,:supply_w_id1 )
( SMALLINT( 3 ) ,:id2 ,:ol_quantity2 ,:supply_w_id2 )
( SMALLINT( 4 ) ,:id3 ,:ol_quantity3 ,:supply_w_id3 )
( SMALLINT( 5 ) ,:id4 ,:ol_quantity4 ,:supply_w_id4 )
( SMALLINT( 6 ) ,:id5 ,:ol_quantity5 ,:supply_w_id5 )
( SMALLINT( 7 ) ,:id6 ,:ol_quantity6 ,:supply_w_id6 )
( SMALLINT( 8 ) ,:id7 ,:ol_quantity7 ,:supply_w_id7 )
( SMALLINT( 9 ) ,:id8 ,:ol_quantity8 ,:supply_w_id8 )
( SMALLINT( 10 ) ,:id9 ,:ol_quantity9 ,:supply_w_id9 )
( SMALLINT( 11 ) ,:id10 ,:ol_quantity10 ,:supply_w_id10 )
( SMALLINT( 12 ) ,:id11 ,:ol_quantity11 ,:supply_w_id11 )
( SMALLINT( 13 ) ,:id12 ,:ol_quantity12 ,:supply_w_id12 )
( SMALLINT( 14 ) ,:id13 ,:ol_quantity13 ,:supply_w_id13 )
( SMALLINT( 15 ) ,:id14 ,:ol_quantity14 ,:supply_w_id14 )
) AS X ( OL_NUMBER , I_ID , I_QTY
I_SUPPLY_W_ID )
) AS ITEMLIST
, TABLE( NEW_OL_ALL( I_ID
, I_QTY
, W_ID
, I_SUPPLY_W_ID
, O_ID
, D_ID
)
) AS NEW_OL_ALL

```

```

)
WHERE NEW_OL_ALL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_1 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) ,:id0 ,:ol_quantity0 )
) AS X ( OL_NUMBER , I_ID , I_QTY
)

```

```

) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_2 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, ( I_PRICE * I_QTY ) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_2 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, ( I_PRICE * I_QTY ) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID

```

```

, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_3 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID

```

```

, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, ( I_PRICE * I_QTY ) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_3 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID

```

```

) AS INS
;
EXEC SQL DECLARE ISOL_Local_4 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID

```

```

, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_5 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID

```

```

, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_6 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
) AS NEW_OL_LOCAL

```



```

) AS INS
;
EXEC SQL DECLARE ISOL_Local_9 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
, ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)

```

```

, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_10 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
, ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
, ( SMALLINT( 10 ) , :id9 , :ol_quantity9 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)

```

```

SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_11 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
)

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        , ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
        , ( SMALLINT( 10 ) , :id9 , :ol_quantity9 )
        , ( SMALLINT( 11 ) , :id10 , :ol_quantity10 )
    ) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_12 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO

```

```

, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
, ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
, ( SMALLINT( 10 ) , :id9 , :ol_quantity9 )
, ( SMALLINT( 11 ) , :id10 , :ol_quantity10 )
, ( SMALLINT( 12 ) , :id11 , :ol_quantity11 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE

```

```

, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_13 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
, ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
, ( SMALLINT( 10 ) , :id9 , :ol_quantity9 )
, ( SMALLINT( 11 ) , :id10 , :ol_quantity10 )
, ( SMALLINT( 12 ) , :id11 , :ol_quantity11 )
, ( SMALLINT( 13 ) , :id12 , :ol_quantity12 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID

```



```

, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_14 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
, ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
, ( SMALLINT( 10 ) , :id9 , :ol_quantity9 )
, ( SMALLINT( 11 ) , :id10 , :ol_quantity10 )
, ( SMALLINT( 12 ) , :id11 , :ol_quantity11 )
, ( SMALLINT( 13 ) , :id12 , :ol_quantity12 )
, ( SMALLINT( 14 ) , :id13 , :ol_quantity13 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST

```

```

, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_15 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
, ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
, ( SMALLINT( 10 ) , :id9 , :ol_quantity9 )
, ( SMALLINT( 11 ) , :id10 , :ol_quantity10 )
, ( SMALLINT( 12 ) , :id11 , :ol_quantity11 )
, ( SMALLINT( 13 ) , :id12 , :ol_quantity12 )
, ( SMALLINT( 14 ) , :id13 , :ol_quantity13 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST

```

```

, I_QTY
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
, ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
, ( SMALLINT( 10 ) , :id9 , :ol_quantity9 )
, ( SMALLINT( 11 ) , :id10 , :ol_quantity10 )
, ( SMALLINT( 12 ) , :id11 , :ol_quantity11 )
, ( SMALLINT( 13 ) , :id12 , :ol_quantity12 )
, ( SMALLINT( 14 ) , :id13 , :ol_quantity13 )
, ( SMALLINT( 15 ) , :id14 , :ol_quantity14 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST
, TABLE( NEW_OL_LOCAL( I_ID
, I_QTY
, W_ID
, O_ID
, D_ID
)
) AS NEW_OL_LOCAL
WHERE NEW_OL_LOCAL.I_PRICE IS NOT NULL
)
SELECT I_PRICE , I_NAME , I_DATA , OL_DIST_INFO , S_DATA , S_QUANTITY
FROM NEW TABLE ( INSERT INTO ORDER_LINE
( OL_O_ID
, OL_D_ID
, OL_W_ID
, OL_NUMBER
, OL_I_ID
, OL_SUPPLY_W_ID
, OL_DELIVERY_D
, OL_QUANTITY
, OL_AMOUNT
, OL_DIST_INFO
)
INCLUDE ( I_PRICE DECIMAL(5,2)
, I_NAME CHAR(24)
, I_DATA VARCHAR(50)
, S_DATA VARCHAR(50)
, S_QUANTITY SMALLINT )
SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, I_SUPPLY_W_ID
, OL_DELIVERY_D
, I_QTY
, TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM DATA
) AS INS
;
EXEC SQL DECLARE ISOL_Local_15 CURSOR FOR
WITH DATA AS ( SELECT O_ID
, D_ID
, W_ID
, OL_NUMBER
, I_ID
, W_ID AS I_SUPPLY_W_ID
, (TIMESTAMP('0001-01-01 00:00:00')) AS OL_DELIVERY_D
, I_QTY
, (I_PRICE * I_QTY) AS TOTAL_PRICE
, OL_DIST_INFO
, I_PRICE, I_NAME, I_DATA, S_DATA, S_QUANTITY
FROM ( SELECT :next_o_id as O_ID
, :w_id AS W_ID
, :d_id as D_ID
, OL_NUMBER
, I_ID
FROM Table( VALUES
( SMALLINT( 1 ) , :id0 , :ol_quantity0 )
, ( SMALLINT( 2 ) , :id1 , :ol_quantity1 )
, ( SMALLINT( 3 ) , :id2 , :ol_quantity2 )
, ( SMALLINT( 4 ) , :id3 , :ol_quantity3 )
, ( SMALLINT( 5 ) , :id4 , :ol_quantity4 )
, ( SMALLINT( 6 ) , :id5 , :ol_quantity5 )
, ( SMALLINT( 7 ) , :id6 , :ol_quantity6 )
, ( SMALLINT( 8 ) , :id7 , :ol_quantity7 )
, ( SMALLINT( 9 ) , :id8 , :ol_quantity8 )
, ( SMALLINT( 10 ) , :id9 , :ol_quantity9 )
, ( SMALLINT( 11 ) , :id10 , :ol_quantity10 )
, ( SMALLINT( 12 ) , :id11 , :ol_quantity11 )
, ( SMALLINT( 13 ) , :id12 , :ol_quantity12 )
, ( SMALLINT( 14 ) , :id13 , :ol_quantity13 )
) AS X ( OL_NUMBER , I_ID , I_QTY )
) AS ITEMLIST

```

```

        ) AS INS
;

// Start processing

in_neword = (struct in_neword_struct *) pin;
neword = (struct out_neword_struct *) pout;

#ifdef DEBUGIT
    new_debug( neword, in_neword, "SP upon entry");
#endif

// Using I_PRICE == 0 as a flag to the client that the ITEM was not fetched (hence bad).

for ( inputItemArrayIndex = 0; inputItemArrayIndex < in_neword->s_O_OL_CNT;
inputItemArrayIndex++ )
{
    i_priceArray[ inputItemArrayIndex ] = 0;
}

neword->deadlocks = -1;

retry_tran:

neword->deadlocks++;

EXEC SQL

    SELECT D_TAX, D_NEXT_O_ID INTO :dist_tax , :next_o_id

    FROM OLD TABLE ( UPDATE DISTRICT

        SET D_NEXT_O_ID = D_NEXT_O_ID + 1

        WHERE D_W_ID = :w_id
        AND D_ID = :d_id

    ) AS OT
;

if ( sqlca.sqlcode != 0 )
{
    DLCHK( retry_tran );
    sqlerror( NEWORD_SQL, "DISTRICT", __FILE__, __LINE__, &sqlca );
    goto ferror;
}

#define NEW_CURSOR_OPEN_ERROR \
{ \
    if( sqlca.sqlcode != 0 ) \
    { \
        goto sql_error; \
    } \
}

#define NEW_CURSOR_ERROR \
{ \
    if( sqlca.sqlcode == 0 ) \
    { \
        neword->s_O_OL_CNT ++; \
    } \
    else \
    if( sqlca.sqlcode == +100 ) \
    { \
        break; \
    } \
    else \
        goto sql_error; \
}

```

```

if ( allLocal )
{
    switch( inputItemCount )
    {
        case 1:
            EXEC SQL OPEN ISOL_Local_1 ;
            NEW_CURSOR_OPEN_ERROR
            for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
            {
                EXEC SQL FETCH ISOL_Local_1
            INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
                NEW_CURSOR_ERROR
            }
            break ;
        case 2:
            EXEC SQL OPEN ISOL_Local_2 ;
            NEW_CURSOR_OPEN_ERROR
            for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
            {
                EXEC SQL FETCH ISOL_Local_2
            INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
                NEW_CURSOR_ERROR
            }
            break ;
        case 3:
            EXEC SQL OPEN ISOL_Local_3 ;
            NEW_CURSOR_OPEN_ERROR
            for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
            {
                EXEC SQL FETCH ISOL_Local_3
            INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
                NEW_CURSOR_ERROR
            }
            break ;
        case 4:
            EXEC SQL OPEN ISOL_Local_4 ;
            NEW_CURSOR_OPEN_ERROR
            for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
            {
                EXEC SQL FETCH ISOL_Local_4
            INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
                NEW_CURSOR_ERROR
            }
            break ;
        case 5:
            EXEC SQL OPEN ISOL_Local_5 ;
            NEW_CURSOR_OPEN_ERROR
            for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
            {
                EXEC SQL FETCH ISOL_Local_5
            INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
                NEW_CURSOR_ERROR
            }
            break ;
        case 6:
            EXEC SQL OPEN ISOL_Local_6 ;
            NEW_CURSOR_OPEN_ERROR
            for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
            {
                EXEC SQL FETCH ISOL_Local_6
            INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
                NEW_CURSOR_ERROR
            }
            break ;
    }
}

```

```

case 7:
    EXEC SQL OPEN ISOL_Local_7 ;
    NEW_CURSOR_OPEN_ERROR
    for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
    {
        EXEC SQL FETCH ISOL_Local_7
    INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
        NEW_CURSOR_ERROR
    }
    break ;
case 8:
    EXEC SQL OPEN ISOL_Local_8 ;
    NEW_CURSOR_OPEN_ERROR
    for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
    {
        EXEC SQL FETCH ISOL_Local_8
    INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
        NEW_CURSOR_ERROR
    }
    break ;
case 9:
    EXEC SQL OPEN ISOL_Local_9 ;
    NEW_CURSOR_OPEN_ERROR
    for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
    {
        EXEC SQL FETCH ISOL_Local_9
    INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
        NEW_CURSOR_ERROR
    }
    break ;
case 10:
    EXEC SQL OPEN ISOL_Local_10 ;
    NEW_CURSOR_OPEN_ERROR
    for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
    {
        EXEC SQL FETCH ISOL_Local_10
    INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
        NEW_CURSOR_ERROR
    }
    break ;
case 11:
    EXEC SQL OPEN ISOL_Local_11 ;
    NEW_CURSOR_OPEN_ERROR
    for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
    {
        EXEC SQL FETCH ISOL_Local_11
    INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
        NEW_CURSOR_ERROR
    }
    break ;
case 12:
    EXEC SQL OPEN ISOL_Local_12 ;
    NEW_CURSOR_OPEN_ERROR
    for ( inputItemArrayIndex = 0 ; inputItemArrayIndex < inputItemCount ;
inputItemArrayIndex++ )
    {
        EXEC SQL FETCH ISOL_Local_12
    INTO :item_price, :item_name, :i_data, :stockDistrictInformation , :s_data , :s_quantity ;
        NEW_CURSOR_ERROR
    }
    break ;
case 13:
    EXEC SQL OPEN ISOL_Local_13 ;
    NEW_CURSOR_OPEN_ERROR

```



```

        sqlerror(NEWWORD_SQL, "Default switch on remote orderline/stock/index",
__FILE__, __LINE__, &sqlca);
        goto ferror;
    }
}

for ( inputItemArrayIndex = 0 ;
      inputItemArrayIndex < in_newword->s_O_OL_CNT // from input
      && i_priceArray[ inputItemArrayIndex ] != 0 ;
      inputItemArrayIndex++ )
{
    // s_I_NAME, and s_S_QUANTITY already set as output host variables

    newword->item[ inputItemArrayIndex ].s_I_PRICE = i_priceArray[ inputItemArrayIndex ] ;

    if ( is_ORIGINAL( s_dataArray[ inputItemArrayIndex ].data,
s_dataArray[ inputItemArrayIndex ].len )
        && is_ORIGINAL( i_dataArray[ inputItemArrayIndex ].data,
i_dataArray[ inputItemArrayIndex ].len ) )
    {
        newword->item[ inputItemArrayIndex ].s_brand_generic = 'B';
    }
    else
    {
        newword->item[ inputItemArrayIndex ].s_brand_generic = 'G';
    }
}

EXEC SQL

SELECT W_TAX, C_DISCOUNT, C_LAST, C_CREDIT, O_ENTRY_D

INTO :ware_tax, :c_discount, :c_last, :c_credit, :o_entry_d

FROM TABLE ( NEW_WH ( :next_o_id
, :w_id
, :d_id
, :c_id
, :inputItemCount
, :allLocal
) ) AS NEW_WH_TABLE
;

if ( sqlca.sqlcode == 0 )
{
    if ( newword->s_O_OL_CNT == in_newword->s_O_OL_CNT )
    {
        newword->s_transtatus = TRAN_OK ;

        EXEC SQL COMMIT;

        if ( sqlca.sqlcode != 0 )
        {
            sqlerror(NEWWORD_SQL, "COMMIT", __FILE__, __LINE__, &sqlca ) ;
            goto ferror;
        }
    }
    else
    {
        newword->s_transtatus = INVALID_ITEM ;

        EXEC SQL ROLLBACK WORK ;

        if ( sqlca.sqlcode != 0 )
        {
            newword->s_transtatus = FATAL_SQLERROR;

            sqlerror(NEWWORD_SQL, "ROLLBACK FAILED (INVALID ITEM)", __FILE__,
__LINE__, &sqlca);

```

```

        }
    }
}
}
else
{
    DLCHK( retry_tran );

    sqlerror( NEWWORD_SQL, "NEW_WH", __FILE__, __LINE__, &sqlca);
    goto ferror;
}

/*-----*/
/* Return to client */
/*-----*/

mexit:

if ( sqlca.sqlcode >= 0 )
{
    storedProcRc = SQLZ_HOLD_PROC ;
}
else
{
    storedProcRc = SQLZ_DISCONNECT_PROC ;
}

#ifdef DEBUGIT
new_debug( newword, in_newword, "SP prior to return");
#endif

return ( storedProcRc ) ;

sql_error:

{
    char tempstr[ 4096 ] ;

    DLCHK( retry_tran ) ;

    sprintf( tempstr, "inputItemCount=%d, :next_o_id=%d, :d_id=%d, :w_id=%d",
inputItemCount, next_o_id, d_id, w_id ) ;
    sqlerror( NEWWORD_SQL, tempstr, __FILE__, __LINE__, &sqlca ) ;
}

ferror:

newword->s_transtatus = FATAL_SQLERROR;

EXEC SQL ROLLBACK WORK;

if ( sqlca.sqlcode != 0 )
{
    sqlerror( NEWWORD_SQL, "ROLLBACK FAILED", __FILE__, __LINE__, &sqlca ) ;
}

goto mexit ;
}

/*
** A little function to search for the string "ORIGINAL" given a string and
** it's length
*/
static unsigned char skip[256] = {8,8,8,8,8,8,8,8, /*0-9*/
8,8,8,8,8,8,8,8, /*10-19*/
8,8,8,8,8,8,8,8, /*20-29*/
8,8,8,8,8,8,8,8, /*30-39*/
8,8,8,8,8,8,8,8, /*40-49*/
8,8,8,8,8,8,8,8, /*50-59*/

```

```

8,8,8,8,1,8,8,8, /*60-69*/
8,4,8,3,8,8,0,8,2,7, /*70-79*/
8,8,6,8,8,8,8,8,8, /*80-89*/
8,8,8,8,8,8,8,8,8, /*90-99*/
8,8,8,8,8,8,8,8,8, /*100-109*/
8,8,8,8,8,8,8,8,8, /*110-119*/
8,8,8,8,8,8,8,8,8, /*120-129*/
8,8,8,8,8,8,8,8,8, /*130-139*/
8,8,8,8,8,8,8,8,8, /*140-149*/
8,8,8,8,8,8,8,8,8, /*150-159*/
8,8,8,8,8,8,8,8,8, /*160-169*/
8,8,8,8,8,8,8,8,8, /*170-179*/
8,8,8,8,8,8,8,8,8, /*180-189*/
8,8,8,8,8,8,8,8,8, /*190-199*/
8,8,8,8,8,8,8,8,8, /*200-209*/
8,8,8,8,8,8,8,8,8, /*210-219*/
8,8,8,8,8,8,8,8,8, /*220-229*/
8,8,8,8,8,8,8,8,8, /*230-239*/
8,8,8,8,8,8,8,8,8, /*240-249*/
8,8,8,8,8); /*250-254*/

static int is_ORIGINAL( char *string, short length )
{
    char *cur_string;
    char *end_string;
    unsigned char *skips;
    int skip_dist;
    int result = 0;

    cur_string = string+7;
    end_string = string + length;
    skips = skip;

    while (cur_string < end_string)
    {
        skip_dist = skips[*cur_string];
        while ( ( skip_dist > 0 ) && ( cur_string < end_string ) )
        {
            skip_dist = skips[*cur_string += skip_dist];
        }

        if ( cur_string >= end_string )
            goto exit;

        if ( cur_string[-4] != 'G' )
            goto noMatch;

        if ( memcmp( cur_string-7, "ORIGINAL", 8 ) == 0 )
        {
            result = 1;
            goto exit;
        }
    }
noMatch:
    cur_string += 8;
} /* end while */

exit:
return ( result ) ;
}

// -----
// Order Status SERVER
// -----

#undef w_id
#undef d_id
#undef c_id_input
#undef o_id
#undef o_entry_d
#undef o_carrier_d

```

```

#undef c_id
#undef c_first
#undef c_middle
#undef c_last
#undef c_balance

SQL_API_RC order_status_internal( char *pin, char *pout )
{
    struct in_ordstat_struct * in_ordstat = (struct in_ordstat_struct *) pin ;
    struct out_ordstat_struct * ordstat = (struct out_ordstat_struct *) pout ;

    struct sqlca sqlca ;

    EXEC SQL BEGIN DECLARE SECTION;

    // From input values

    ///#sqlint32 w_id ;
    ///#short d_id ;
    sqlint32 c_id_input ;

    struct s_data_type { short len ; char data[ 16 ] ; } c_last_input ;

    // From queries

    // From initial query

    sqlint32 o_id ;
    ///#sqlint32 c_id ;
    short o_carrier_id ;
    ///#sqlint64 o_entry_d ;

    char c_first[ 16 ] ;
    char c_middle[ 2 ] ;
    ///#char c_last[ 16 ] ;
    double c_balance ;

    // From cursor

    sqlint32 ol_i_id ;
    sqlint32 ol_supply_w_id ;
    short ol_quantity ;
    float ol_amount ;
    char ol_delivery_d [27] ;
    ///#char o_entry_d [ 27 ] ;

    EXEC SQL END DECLARE SECTION;

    ///#struct s_data_type { short len ; char data[ 16 ] ; } c_last_input ;

    int storedProcRc ;
    int itemArrayIndex = 0 ;

    #define w_id in_ordstat->s_W_ID ;
    #define d_id in_ordstat->s_D_ID ;
    #define c_id_input in_ordstat->s_C_ID
    #define o_id ordstat->s_O_ID
    #define o_entry_d ordstat->s_O_ENTRY_D_time
    #define o_carrier_id ordstat->s_O_CARRIER_ID
    #define c_id ordstat->s_C_ID
    #define c_first ordstat->s_C_FIRST
    #define c_middle ordstat->s_C_MIDDLE
    #define c_last ordstat->s_C_LAST
    #define c_balance ordstat->s_C_BALANCE

    EXEC SQL DECLARE read_orderline_cur CURSOR FOR

        SELECT OL_I_ID, OL_SUPPLY_W_ID, OL_QUANTITY, OL_AMOUNT,
        OL_DELIVERY_D

```

```

        FROM ORDER_LINE

        WHERE OL_W_ID = :w_id
        AND OL_D_ID = :d_id
        AND OL_O_ID = :o_id

        FOR FETCH ONLY ;

    ordstat->deadlocks = -1 ;

    #ifdef DEBUGIT
    ord_debug(ordstat, in_ordstat, "SP upon entry");
    #endif

    retry_tran:

    ordstat->deadlocks ++ ;

    if ( c_id_input == 0 )
    {
        c_last_input.len = strlen( in_ordstat->s_C_LAST ) ;
        memcpy( c_last_input.data , in_ordstat->s_C_LAST , c_last_input.len ) ;

        EXEC SQL

            SELECT O_ID, O_CARRIER_ID, O_ENTRY_D, C_BALANCE, C_FIRST, C_MIDDLE, C_ID

            INTO :o_id, :o_carrier_id , :o_entry_d , :c_balance, :c_first, :c_middle, :c_id

            FROM TABLE ( ORD_C_LAST( :w_id
                , :d_id
                , :c_last_input
                ) AS ORD_C_LAST

            ) ;
    }
    else
    {
        EXEC SQL

            SELECT O_ID, O_CARRIER_ID, O_ENTRY_D , C_BALANCE, C_FIRST,
            C_MIDDLE , C_LAST

            INTO :o_id, :o_carrier_id , :o_entry_d , :c_balance, :c_first, :c_middle, :c_last

            FROM TABLE ( ORD_C_ID( :w_id
                , :d_id
                , :c_id_input
                ) AS ORD_C_ID

            ) ;
    }

    if ( sqlca.sqlcode != 0 )
    {
        DLCHK( retry_tran ) ;
        sqlerror( ORDSTAT_SQL, "READ CUST and ORDERS", __FILE__, __LINE__,
        &sqlca ) ;
        goto ferror ;
    }

    /*-----*/
    /* Read ORDER_LINES */
    /*-----*/

    EXEC SQL OPEN read_orderline_cur ;

    if ( sqlca.sqlcode != 0 )
    {

```

```

        DLCHK( retry_tran ) ;
        sqlerror(ORDSTAT_SQL, "OPEN CURSOR read_orderline_cur", __FILE__, __LINE__,
        &sqlca ) ;
        goto ferror ;
    }

    itemArrayIndex = 0 ;
    {
        do
        {
            EXEC SQL FETCH read_orderline_cur

                INTO :ol_i_id , :ol_supply_w_id , :ol_quantity , :ol_amount , :ol_delivery_d ;

            if ( sqlca.sqlcode == 0 )
            {
                ordstat->item[ itemArrayIndex ].s_OL_I_ID = ol_i_id ;
                ordstat->item[ itemArrayIndex ].s_OL_SUPPLY_W_ID = ol_supply_w_id ;
                ordstat->item[ itemArrayIndex ].s_OL_QUANTITY = ol_quantity ;
                ordstat->item[ itemArrayIndex ].s_OL_AMOUNT = ol_amount ;
                strcpy(ordstat->item[ itemArrayIndex ].s_OL_DELIVERY_D_time, ol_delivery_d) ;

                itemArrayIndex++ ;
            }
            else
            if ( sqlca.sqlcode < 0 )
            {
                DLCHK( retry_tran ) ;
                sqlerror( ORDSTAT_SQL, "FETCH CURSOR read_orderline_cur", __FILE__,
                __LINE__, &sqlca ) ;
                goto ferror ;
            }
            while ( sqlca.sqlcode == 0 ) ;
        }

        ordstat->s_ol_cnt = itemArrayIndex ;

        EXEC SQL COMMIT ;

        if ( sqlca.sqlcode == 0 )
        {
            ordstat->s_transtatus = TRAN_OK ;
        }
        else
        {
            DLCHK( retry_tran ) ;
            sqlerror(ORDSTAT_SQL, "COMMIT", __FILE__, __LINE__, &sqlca) ;
            goto ferror ;
        }

        mexit:

        if ( sqlca.sqlcode >= 0 )
        {
            storedProcRc = SQLZ_HOLD_PROC ;
        }
        else
        {
            storedProcRc = SQLZ_DISCONNECT_PROC ;
        }

        #ifdef DEBUGIT
        ord_debug(ordstat, in_ordstat, "SP prior to return");
        #endif

        return ( storedProcRc ) ;

        ferror:
    {

```

```

ordstat->s_transtatus = FATAL_SQLERROR ;

EXEC SQL ROLLBACK WORK ;

if ( sqlca.sqlcode != 0 )
{
  sqlerror(ORDSTAT_SQL, "ROLLBACK FAILED", __FILE__, __LINE__, &sqlca);
}

goto mexit;
}

// -----
// Delivery SERVER
// -----

#undef d_id
#undef c_id
#undef w_id
#undef o_carrier_id
#undef ol_delivery_d

SQL_API_RC delivery_internal ( char * pin, char * pout )
{
  struct in_delivery_struct * in_delivery = (struct in_delivery_struct *) pin ;
  struct out_delivery_struct * delivery = (struct out_delivery_struct *) pout ;

  struct sqlca sqlca ;

  int storedProcRc ;

  short district_id ;
  sqlint32 customer_id ;

  EXEC SQL BEGIN DECLARE SECTION;

  // input

  ##sqlint32 w_id ;
  ##short d_id ;
  ##sqlint32 c_id ;
  ##short o_carrier_id ;
  ##sqlint64 ol_delivery_d ;

  // output

  short no_o_id_indicator = 0 ;
  sqlint32 no_o_id ;

  EXEC SQL END DECLARE SECTION;

#define d_id district_id
#define c_id customer_id

#define w_id in_delivery->s_W_ID
#define o_carrier_id in_delivery->s_O_CARRIER_ID
#define ol_delivery_d in_delivery->s_O_DELIVERY_D_time

  delivery->deadlocks = -1 ;

#ifdef DEBUGIT
  del_debug( delivery, in_delivery, "SP upon entry");
#endif

  // Deadlock Handling
  // -----
  // Since we COMMIT inside the for() loop, we must take special
  // care while handling deadlocks. This is best explained by
  // an example.
  //

```

```

// Assume we deadlock on d_id=6. This means that an order from the
// first 5 districts have already been delivered. We will then
// restart the loop (retry_tran). However, the loop will restart
// at d_id = 1! This means that the second (and all subsequent)
// time through the loop, we will deliver orders for districts that
// have already been delivered, with the net result being more than
// 10 orders being delivered.
//
// The solution to this problem is to initialize the starting point
// of the loop "before" the retry_tran label. This will ensure that
// if we deadlock, we will restart the loop with the same district
// that we deadlocked on, and we won't deliver any extra orders.
//
// NOTE: If we ever change this back to one COMMIT per transaction
// (instead of one COMMIT per iteration), then the initialization
// of d_id must be moved back into the for loop. (A rollback due
// to deadlock in this case would rollback all delivered orders so
// far, so we'd need to re-deliver them all on the next iteration.)

d_id = 1;

retry_tran:

  delivery->deadlocks++;

  for ( ; d_id <= DISTRICTS_PER_WAREHOUSE ; d_id++ )
  {
    no_o_id = 0 ;
    no_o_id_indicator = 0 ;

    EXEC SQL BEGIN COMPOUND NOT ATOMIC STATIC

      SELECT O_ID

      INTO :no_o_id :no_o_id_indicator

      FROM TABLE ( DEL( :w_id , :d_id , :o_carrier_id ) ) AS T ;

    COMMIT ;

    END COMPOUND ;

    if ( sqlca.sqlcode == 0 )
    {
      delivery->s_O_ID[ d_id - 1 ] = no_o_id ;
    }
    else
    {
      DLCHK( retry_tran );

      sqlerror( DELIVERY_SQL , "DELIVERY", __FILE__, __LINE__, &sqlca);
      goto ferror ;
    }
  }

  delivery->s_transtatus = TRAN_OK ;

mexit:

  if ( sqlca.sqlcode >= 0 )
  {
    storedProcRc = SQLZ_HOLD_PROC ;
  }
  else
  {
    storedProcRc = SQLZ_DISCONNECT_PROC ;
  }
}

#ifdef DEBUGIT
del_debug( delivery, in_delivery, "SP prior to return");

```

```

#endif

  return ( storedProcRc ) ;

ferror:

  delivery->s_transtatus = FATAL_SQLERROR ;

  EXEC SQL ROLLBACK WORK ;

  if ( sqlca.sqlcode != 0 )
  {
    sqlerror( DELIVERY_SQL, "ROLLBACK FAILED", __FILE__, __LINE__, &sqlca ) ;
  }

  goto mexit ;
}

// -----
// Stored Procedure Stubs
// -----

SQL_API_RC SQL_API_FN news( char *pin, char *pout )
{
  return new_order_internal( pin, pout ) ;
}

SQL_API_RC SQL_API_FN ords( char *pin, char *pout )
{
  return order_status_internal( pin, pout ) ;
}

SQL_API_RC SQL_API_FN dels ( char * pin, char * pout )
{
  return delivery_internal( pin, pout ) ;
}

Src.Srv/uncat-func.ddl

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-----
-- uncat-func.ddl - Drop table function DDL
--
--
-- STOCK LEVEL
DROP SPECIFIC FUNCTION STOCK_LEVEL %
-- DELIVERY
DROP SPECIFIC FUNCTION DELIVERY %
-- ORDER STATUS
DROP SPECIFIC FUNCTION ORD_C_LAST %
DROP SPECIFIC FUNCTION ORD_C_ID %
-- PAYMENT
DROP SPECIFIC FUNCTION PAY_C_LAST %
DROP SPECIFIC FUNCTION PAY_C_ID %
-- NEW ORDER
DROP SPECIFIC FUNCTION NEW_OL_ALL %

```

```
DROP SPECIFIC FUNCTION NEW_OL_LOCAL %
DROP SPECIFIC FUNCTION NEW_WH %
```

```
DROP PROCEDURE news
  (varchar(262),varchar(682));
DROP PROCEDURE news
  (varchar(270),varchar(662));
DROP PROCEDURE news;
```

Src.Srv/uncat-proc.ddl

```
DROP PROCEDURE pays;

DROP PROCEDURE ords
  (varchar(42),varchar(822));
DROP PROCEDURE ords
  (varchar(42),varchar(446));
DROP PROCEDURE ords;

DROP PROCEDURE dels
  (varchar(14),varchar(50));
DROP PROCEDURE dels
  (varchar(22),varchar(50));
DROP PROCEDURE dels;
```

```
DROP PROCEDURE stks;
```

include/db2tpcc.h

```
/*
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**
**
*/
db2tpcc.h - Macros and Miscellany
*/

#ifndef __DB2TPCC_H
#define __DB2TPCC_H

#include <sys/types.h>

#include "lval.h"

/*
** Transaction Return Codes (s_transtatus)
**
*/

#define INVALID_ITEM 100
#define TRAN_OK 0
#define FATAL_SQLERROR -1

/*
** Definition of Unused and Bad Items
**
*/
/* Define unused item ID to be 0. This allows the SUT to determine the
```

```
*/ number of items in the order as required by 2.4.1.3 and 2.4.2.2 since */
/* the assumption that any item with OL_I_ID = 0 is unused will be true. */
/* This in turn requires that the value used for an invalid item is */
/* equal to ITEMS + 1. */
/*
*/

#define INVALID_ITEM_ID (2 * ITEMS) + 1
#define UNUSED_ITEM_ID 0

#define MIN_WAREHOUSE 1
#define MAX_WAREHOUSE WAREHOUSES

/*
** NURand Constants
** C_C_LAST_RUN and C_C_LAST_LOAD must adhere to clause 2.1.6.
** Analysis indicates that a C_LAST delta of 85 is optimal.
**
*/

#define C_C_LAST_RUN 88
#define C_C_LAST_LOAD 173
#define C_C_ID 319
#define C_OL_I_ID 3849
#define A_C_LAST 255
#define A_C_ID 1023
#define A_OL_I_ID 8191

/*
** Transaction Type Identifiers
**
*/

#define CLIENT_SQL 0
#define NEWORD_SQL 1
#define PAYMENT_SQL 2
#define ORDSTAT_SQL 3
#define DELIVERY_SQL 4
#define STOCKLEV_SQL 5

#define SPGENERAL_PAD 3
#define SPGENERAL_ADJUST sizeof(int16_t)

struct in_neword_struct {
  int16_t len;
  int16_t pad[SPGENERAL_PAD];
  struct in_items_struct {
    int32_t s_OL_I_ID;
    int32_t s_OL_SUPPLY_W_ID;
    int16_t s_OL_QUANTITY;
    int16_t pad1[3];
  } in_item[15];
  int32_t s_C_ID;
  int32_t s_W_ID;
  int16_t s_D_ID;
  int16_t s_O_OL_CNT; /* init by SUT */
  int16_t s_all_local;
  int16_t duplicate_items;
};

struct out_neword_struct {
  int16_t len;
  int16_t pad[SPGENERAL_PAD];
  struct items_struct {
    float s_I_PRICE;
    float s_OL_AMOUNT;
    int16_t s_S_QUANTITY;
    int16_t pad2;
    char s_I_NAME[25];
    char s_brand_generic;
  } item[15];
  float s_W_TAX;
  float s_D_TAX;
  float s_C_DISCOUNT;
```

```
float s_total_amount;
int32_t s_O_ID;
int16_t s_O_OL_CNT;
int16_t s_transtatus;
int16_t deadlocks;
char s_C_LAST[17];
char s_C_CREDIT[3];
char s_O_ENTRY_D_time[27];
};

struct in_payment_struct {
  int16_t len;
  int16_t pad[SPGENERAL_PAD];
  float s_H_AMOUNT;
  int32_t s_W_ID;
  int32_t s_C_W_ID;
  int32_t s_C_ID;
  int16_t s_C_D_ID;
  int16_t s_D_ID;
  char s_C_LAST[17];
};

struct out_payment_struct {
  int16_t len;
  int16_t pad[SPGENERAL_PAD];
  double s_C_CREDIT_LIM;
  double s_C_BALANCE;
  float s_C_DISCOUNT;
  int32_t s_C_ID;
  int16_t s_transtatus;
  int16_t deadlocks;
  char s_W_STREET_1[21];
  char s_W_STREET_2[21];
  char s_W_CITY[21];
  char s_W_STATE[3];
  char s_W_ZIP[10];
  char s_D_STREET_1[21];
  char s_D_STREET_2[21];
  char s_D_CITY[21];
  char s_D_STATE[3];
  char s_D_ZIP[10];
  char s_C_FIRST[17];
  char s_C_MIDDLE[3];
  char s_C_LAST[17];
  char s_C_STREET_1[21];
  char s_C_STREET_2[21];
  char s_C_CITY[21];
  char s_C_STATE[3];
  char s_C_ZIP[10];
  char s_C_PHONE[17];
  char s_C_CREDIT[3];
  char s_C_DATA[201];
  char s_H_DATE_time[27];
  char s_C_SINCE_time[27];
};

struct in_ordstat_struct {
  int16_t len;
  int16_t pad[SPGENERAL_PAD];
  int32_t s_C_ID;
  int32_t s_W_ID;
  int16_t s_D_ID;
  int16_t pad1[3];
  char s_C_LAST[17];
};

struct out_ordstat_struct {
  int16_t len;
  int16_t pad[SPGENERAL_PAD];
```

```

double s_C_BALANCE;
int32_t s_C_ID;
int32_t s_O_ID;
int16_t s_O_CARRIER_ID;
int16_t s_ol_cnt;
int16_t pad1[2];
struct oitems_struct {
    double s_OL_AMOUNT;
    int32_t s_OL_ID;
    int32_t s_OL_SUPPLY_W_ID;
    int16_t s_OL_QUANTITY;
    int16_t pad2;
    char s_OL_DELIVERY_D_time[27];
} item[15];
int16_t s_transtatus;
int16_t deadlocks;
char s_C_FIRST[17];
char s_C_MIDDLE[3];
char s_C_LAST[17];
char s_O_ENTRY_D_time[27];
int16_t pad3[2];
};

struct in_delivery_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_W_ID;
    int16_t s_O_CARRIER_ID;
};

struct out_delivery_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_O_ID[10];
    int16_t s_transtatus;
    int16_t deadlocks;
};

struct in_stocklev_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_threshold;
    int32_t s_W_ID;
    int16_t s_D_ID;
};

struct out_stocklev_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_low_stock;
    int16_t s_transtatus;
    int16_t deadlocks;
};

/* ***** */
/* Transaction Prototypes */
/* ***** */

#ifdef __cplusplus
extern "C" {
#endif

extern int neword_sql(struct in_neword_struct*, struct out_neword_struct*);
extern int payment_sql(struct in_payment_struct*, struct out_payment_struct*);
extern int ordstat_sql(struct in_ordstat_struct*, struct out_ordstat_struct*);
extern int delivery_sql(struct in_delivery_struct*, struct out_delivery_struct*);
extern int stocklev_sql(struct in_stocklev_struct*, struct out_stocklev_struct*);

#ifdef __cplusplus
}

```

```

#endif

/* ***** */
/* DB2 Connect/Disconnect & Thread Context Wrappers */
/* ***** */

#ifdef __cplusplus
extern "C" {
#endif

extern int connect_to_TM(char*);
extern int connect_to_TM_auth(char*, char*, char*);
extern int disconnect_from_TM(void);

#ifdef __cplusplus
}
#endif

#ifdef __DB2TPCC_H

include/lval.h

/* lval.h - generated automatically at 20060905.1052 */

#ifdef __LVAL_H
#define __LVAL_H
#define WAREHOUSES 41600
#define DISTRICTS_PER_WAREHOUSE 10
#define CUSTOMERS_PER_DISTRICT 3000
#define ITEMS 100000
#define STOCK_PER_WAREHOUSE 100000
#define MIN_OL_PER_ORDER 5
#define MAX_OL_PER_ORDER 15
#define NU_ORDERS_PER_DISTRICT 900
#endif /* __LVAL_H

include/tpccapp.h

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*****

/*
 * tpccapp.h - Application Macros
 */

#ifdef __TPCCAPP_H
#define __TPCCAPP_H

#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <string.h>
#include <time.h>

#define daricall

#include "sqlca.h"
#include "sqlcodes.h"

```

```

#ifdef SWAP_ENDIAN
#define SWAP_BYTE(Var) SwapEndian((void*)&Var, sizeof(Var))
/* ***** */
FUNCTION: SwapEndian
PURPOSE: Swap the byte order of a structure
EXAMPLE: int l=0x12345678; SWAP_BYTE(l); l => 0x78563412;
IMPLEMENTATION: Fold Addr in half, swap header & tail by XOR op
                e.g.: *a = 0x12 [ Addr + 0];
                    *b = 0x78 [ Add + 4 - 0 - 1 = Addr+3];
                    *a ^= *b; // sets *a to 0x6A
                    *b ^= *a; // sets *b to 0x12
                    *a ^= *b; // sets *a to 0x78

                Now *a => 0x78 && *b => 0x12
/* ***** */

void SwapEndian(void *Addr, int nb)
{
    int i;
    for (i=0; i<nb/2; i++)
    {
        char *a = (char*)Addr+i;
        char *b = (char*)Addr+(nb-i-1);

        *a ^= *b;
        *b ^= *a;
        *a ^= *b;
    }
}
#endif /*SWAP_ENDIAN

/* ***** */
/* SQLCODE Macros */
/* ***** */

#define DLCHK(a) \
if (sqlca.sqlcode == SQL_RC_E911) { goto a; }

#define NACOMPCHK(last) \
if (sqlca.sqlcode != SQL_RC_E1339) { last = -1; } \
else { int a = ((sqlca.sqlerrmc[4] == 0x20) ? 0 : sqlca.sqlerrmc[4]-0x30); \
int b = ((sqlca.sqlerrmc[5] == 0x20) ? 0 : sqlca.sqlerrmc[5]-0x30); \
if (b == 0) { last = a; } else { last = a * 10 + b; } \
}

#ifdef __TPCCAPP_H

include/tpccdbg.h

/* ***** */
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*****

/*
 * tpccdbg.h - Debugging Macros
 *
 */

```



```

#ifdef __TPCCDBG_H
#define __TPCCDBG_H

#ifdef __cplusplus
extern "C" {
#endif

extern void sqlerror (int tranType, char *msg, char *file, int line,
    SQL_STRUCTURE sqlca *psqlca);

extern void new_debug (struct out_neword_struct *neword_ptr,
    struct in_neword_struct *in_neword_ptr,
    char *msg);
extern void pay_debug (struct out_payment_struct *payment_ptr,
    struct in_payment_struct *in_payment_ptr,
    char *msg);
extern void ord_debug (struct out_ordstat_struct *ordstat_ptr,
    struct in_ordstat_struct *in_ordstat_ptr,
    char *msg);
extern void del_debug (struct out_delivery_struct *delivery_ptr,
    struct in_delivery_struct *in_delivery_ptr,
    char *msg);
extern void stk_debug (struct out_stocklev_struct *stocklev_ptr,
    struct in_stocklev_struct *in_stocklev_ptr,
    char *msg);

extern void new_print (struct out_neword_struct *neword_ptr,
    struct in_neword_struct *in_neword_ptr,
    char *filename,
    char *msg);
extern void pay_print (struct out_payment_struct *payment_ptr,
    struct in_payment_struct *in_payment_ptr,
    char *filename,
    char *msg);
extern void ord_print (struct out_ordstat_struct *ordstat_ptr,
    struct in_ordstat_struct *in_ordstat_ptr,
    char *filename,
    char *msg);
extern void del_print (struct out_delivery_struct *delivery_ptr,
    struct in_delivery_struct *in_delivery_ptr,
    char *filename,
    char *msg);
extern void stk_print (struct out_stocklev_struct *stocklev_ptr,
    struct in_stocklev_struct *in_stocklev_ptr,
    char *filename,
    char *msg);

#ifdef __cplusplus
}
#endif

#endif // __TPCCDBG_H

```

tpccenv.sh

```

#####
#####
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## disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
#####
#####

```

```

#
# tpccenv.sh - UNIX Environment Setup
#
# The Kit Version
export TPCC_VERSION=CK060815

# The DB2 Instance Name (for DB2)
export DB2INSTANCE=${USER}

# The OS being used (i.e. "UNIX", "LINUX", "WINDOWS")
export PLATFORM=LINUX

# The type of make command and slash used by the OS.
# (i.e. UNIX - "/", WINDOWS - "\").
# These are referenced all over the kit.
export SLASH="/";
export MAKE=make

# Specifies whether or not to use dari stored proc's for the TPC-C driver. Set to either
DARIVERSION or NONDARI;
#export TPCC_SPTYPE=NOSP
#export TPCC_SPTYPE=SPGENERAL2
export TPCC_SPTYPE=SPGENERAL
#export TPCC_SPTYPE=DARI2SQLDA

export DB2VERSION=v8

# The schema name is typically the SQL authorization ID (or username).
# This is required for runstats and EEE.
export TPCC_SCHEMA=${USER}

# DB2 EE/EEE Configuration
export DB2EDITION=EE
#export DB2EDITION=EEE
export DB2NODE=0
export DB2NODES=1; # set to the number of nodes you have. Set to 1 for EE.

# TPCC General Configuration
export TPCC_DBNAME=TPCC
export TPCC_ROOT=${HOME}/tpc-c.ibm
export TPCC_SQLLIB=${HOME}/sqllib
export TPCC_RUNDATA=${HOME}/tpccdata

# TPCC Debug Configuration
# This is the path where all error and debug logs are placed.
# To get debugging from within the stored procedures, you must
# set DB2ENVLIST="TPCC_DEBUGDIR" in tpcc.config.
export TPCC_DEBUGDIR=/tmp

# Specifies where stored procedures should be placed and if they should
# be fenced.
export TPCC_SPDIR=${TPCC_SQLLIB}/function
export TPCC_FENCED=NO

```

10 Appendix B: Tunable Parameters

10.1. Database Parameters

db2set.cfg.out

```

DB2LINUXAIO=YES
DB2_RESOURCE_POLICY=/home/tpcc/tpc-c.ibm/aff2_sixteen_listener.cfg
DB2_SELUDI_COMM_BUFFER=Y
DB2_USE_ALTERNATE_PAGE_CLEANING=YES
DB2_MAX_NON_TABLE_LOCKS=500
DB2_LGPAGE_BP=ON
DB2_TRUSTED_BINDIN=ON
DB2_KEEPTABLELOCK=ON
DB2_NO_FORK_CHECK=ON
DB2_ALLOCATION_SIZE=8388608
DB2_APM_PERFORMANCE=ALL
DB2_ENABLE_BUFFER=OFF
DB2_PINNED_BP=ON
DB2_SELECTIVITY=ON
DB2ASSUMEUPDATE=ON
DB2CHECKCLIENTINTERVAL=0
DB2_HASH_JOIN=OFF
DB2CHKSQLDA=OFF
DB2_COLLECT_TS_REC_INFO=false
DB2COMM=tcPIP
DB2CHKPTR=OFF

```

db.cfg.out

```

Database Configuration for Database tpcc

Database configuration release level = 0x0b00
Database release level = 0x0b00

Database territory = US
Database code page = 819
Database code set = ISO8859-1
Database country/region code = 1
Database collating sequence = IDENTITY
Alternate collating sequence (ALT_COLLATE) =
Database page size = 4096

Dynamic SQL Query management (DYN_QUERY_MGMT) = DISABLE

Discovery support for this database (DISCOVER_DB) = ENABLE

Restrict access = NO
Default query optimization class (DFT_QUERYOPT) = 5
Degree of parallelism (DFT_DEGREE) = 1
Continue upon arithmetic exceptions (DFT_SQLMATHWARN) = NO
Default refresh age (DFT_REFRESH_AGE) = 0
Default maintained table types for opt (DFT_MTTB_TYPES) = SYSTEM
Number of frequent values retained (NUM_FREQVALUES) = 10
Number of quantiles retained (NUM_QUANTILES) = 20

Backup pending = NO

Database is consistent = YES
Rollforward pending = NO
Restore pending = NO

```

```

Multi-page file allocation enabled = YES

Log retain for recovery status = RECOVERY
User exit for logging status = NO

Self tuning memory (SELF_TUNING_MEM) = OFF
Size of database shared memory (4KB) (DATABASE_MEMORY) = 30760536
Database memory threshold (DB_MEM_THRESH) = 10
Max storage for lock list (4KB) (LOCKLIST) = 8000
Percent. of lock lists per application (MAXLOCKS) = 100
Package cache size (4KB) (PCKCACHESZ) = 1000
Sort heap thres for shared sorts (4KB) (SHEAPTHRES_SHR) = 5000
Sort list heap (4KB) (SORTHEAP) = 16

Database heap (4KB) (DBHEAP) = 8192
Catalog cache size (4KB) (CATALOGCACHE_SZ) = (MAXAPPLS*4)
Log buffer size (4KB) (LOGBUFSZ) = 3000
Utilities heap size (4KB) (UTIL_HEAP_SZ) = 5000
Buffer pool size (pages) (BUFFPAGE) = 1000
Max size of appl. group mem set (4KB) (APPGROUP_MEM_SZ) = 30000
Percent of mem for appl. group heap (GROUPHEAP_RATIO) = 70
Max appl. control heap size (4KB) (APP_CTL_HEAP_SZ) = 128

SQL statement heap (4KB) (STMTHESZ) = 16384
Default application heap (4KB) (APPLHEAPSZ) = 328
Statistics heap size (4KB) (STAT_HEAP_SZ) = 4384

Interval for checking deadlock (ms) (DLCHKTIME) = 3000
Lock timeout (sec) (LOCKTIMEOUT) = -1

Changed pages threshold (CHNGPGS_THRESH) = 99
Number of asynchronous page cleaners (NUM_IOCLEANERS) = 1
Number of I/O servers (NUM_IOSERVERS) = 1
Index sort flag (INDEXSORT) = YES
Sequential detect flag (SEQDETECT) = NO
Default prefetch size (pages) (DFT_PREFETCH_SZ) = AUTOMATIC

Track modified pages (TRACKMOD) = OFF

Default number of containers = 1
Default tablespace extentsize (pages) (DFT_EXTENT_SZ) = 32

Max number of active applications (MAXAPPLS) = 1400
Average number of active applications (AVG_APPLS) = 1
Max DB files open per application (MAXFILOP) = 1600

Log file size (4KB) (LOGFILSIZ) = 512000
Number of primary log files (LOGPRIMARY) = 256
Number of secondary log files (LOGSECOND) = 0
Changed path to log files (NEWLOGPATH) =
Path to log files = /dev/raw/raw1300
Overflow log path (OVERFLOWLOGPATH) =
Mirror log path (MIRRORLOGPATH) =
First active log file = S0000116.LOG
Block log on disk full (BLK_LOG_DSK_FUL) = NO
Percent max primary log space by transaction (MAX_LOG) = 0
Num. of active log files for 1 active UOW(NUM_LOG_SPAN) = 0

Group commit count (MINCOMMIT) = 1
Percent log file reclaimed before soft ckckpt (SOFTMAX) = 1726
Log retain for recovery enabled (LOGRETAIN) = RECOVERY
User exit for logging enabled (USEREXIT) = OFF

HADR database role = STANDARD
HADR local host name (HADR_LOCAL_HOST) =
HADR local service name (HADR_LOCAL_SVC) =
HADR remote host name (HADR_REMOTE_HOST) =
HADR remote service name (HADR_REMOTE_SVC) =
HADR instance name of remote server (HADR_REMOTE_INST) =

```

```

HADR timeout value (HADR_TIMEOUT) = 120
HADR log write synchronization mode (HADR_SYNCMODE) = NEARSYNC

First log archive method (LOGARCHMETH1) = LOGRETAIN
Options for logarchmeth1 (LOGARCHOPT1) =
Second log archive method (LOGARCHMETH2) = OFF
Options for logarchmeth2 (LOGARCHOPT2) =
Failover log archive path (FAILARCHPATH) =
Number of log archive retries on error (NUMARCHRETRY) = 5
Log archive retry Delay (secs) (ARCHRETRYDELAY) = 20
Vendor options (VENDOROPT) =

Auto restart enabled (AUTORESTART) = ON
Index re-creation time and redo index build (INDEXREC) = SYSTEM (RESTART)
Log pages during index build (LOGINDEXBUILD) = OFF
Default number of loadrec sessions (DFT_LOADREC_SES) = 1
Number of database backups to retain (NUM_DB_BACKUPS) = 12
Recovery history retention (days) (REC_HIS_RETENTN) = 366

TSM management class (TSM_MGMTCLASS) =
TSM node name (TSM_NODENAME) =
TSM owner (TSM_OWNER) =
TSM password (TSM_PASSWORD) =

Automatic maintenance (AUTO_MAINT) = OFF
Automatic database backup (AUTO_DB_BACKUP) = OFF
Automatic table maintenance (AUTO_TBL_MAINT) = OFF
Automatic runstats (AUTO_RUNSTATS) = OFF
Automatic statistics profiling (AUTO_STATS_PROF) = OFF
Automatic profile updates (AUTO_PROF_UPD) = OFF
Automatic reorganization (AUTO_REORG) = OFF

```

dbm.cfg.out

```

Database Manager Configuration

Node type = Enterprise Server Edition with local and remote clients

Database manager configuration release level = 0x0b00

CPU speed (millisec/instruction) (CPUSPEED) = 1.889377e-07
Communications bandwidth (MB/sec) (COMM_BANDWIDTH) = 1.000000e+02

Max number of concurrently active databases (NUMDB) = 1
Federated Database System Support (FEDERATED) = NO
Transaction processor monitor name (TP_MON_NAME) =

Default charge-back account (DFT_ACCOUNT_STR) =

Java Development Kit installation path (JDK_PATH) = /home/tpcc/sqllib/java/jdk64

Diagnostic error capture level (DIAGLEVEL) = 1
Notify Level (NOTIFYLEVEL) = 1
Diagnostic data directory path (DIAGPATH) =

Default database monitor switches
Buffer pool (DFT_MON_BUFPOOL) = OFF
Lock (DFT_MON_LOCK) = OFF
Sort (DFT_MON_SORT) = OFF
Statement (DFT_MON_STMT) = OFF
Table (DFT_MON_TABLE) = OFF
Timestamp (DFT_MON_TIMESTAMP) = OFF
Unit of work (DFT_MON_UOW) = OFF
Monitor health of instance and databases (HEALTH_MON) = OFF

SYSADM group name (SYSADM_GROUP) =
SYSCtrl group name (SYSCtrl_GROUP) =
SYSMAINT group name (SYSMAINT_GROUP) =
SYSMON group name (SYSMON_GROUP) =

```

```

Client Userid-Password Plugin (CLNT_PW_PLUGIN) =
Client Kerberos Plugin (CLNT_KRB_PLUGIN) =
Group Plugin (GROUP_PLUGIN) =
GSS Plugin for Local Authorization (LOCAL_GSSPLUGIN) =
Server Plugin Mode (SRV_PLUGIN_MODE) = UNFENCED
Server List of GSS Plugins (SRVCON_GSSPLUGIN_LIST) =
Server Userid-Password Plugin (SRVCON_PW_PLUGIN) =
Server Connection Authentication (SRVCON_AUTH) = NOT_SPECIFIED
Database manager authentication (AUTHENTICATION) = CLIENT
Cataloging allowed without authority (CATALOG_NOAUTH) = NO
Trust all clients (TRUST_ALLCLNTS) = YES
Trusted client authentication (TRUST_CLNTAUTH) = CLIENT
Bypass federated authentication (FED_NOAUTH) = NO

Default database path (DFTDBPATH) = /home/tpcc

Database monitor heap size (4KB) (MON_HEAP_SZ) = 4096
Java Virtual Machine heap size (4KB) (JAVA_HEAP_SZ) = 1024
Audit buffer size (4KB) (AUDIT_BUF_SZ) = 0
Size of instance shared memory (4KB) (INSTANCE_MEMORY) = AUTOMATIC
Backup buffer default size (4KB) (BACKBUFSZ) = 1024
Restore buffer default size (4KB) (RESTDUBSZ) = 1024

Sort heap threshold (4KB) (SHEAPTHRES) = 0

Directory cache support (DIR_CACHE) = YES

Application support layer heap size (4KB) (ASLHEAPSZ) = 15
Max requester I/O block size (bytes) (RQIOBLK) = 4096
Query heap size (4KB) (QUERY_HEAP_SZ) = 1000

Workload impact by throttled utilities (UTIL_IMPACT_LIM) = 10

Priority of agents (AGENTPRI) = SYSTEM
Max number of existing agents (MAXAGENTS) = 1400
Agent pool size (NUM_POOLAGENTS) = 0
Initial number of agents in pool (NUM_INITAGENTS) = 0
Max number of coordinating agents (MAX_COORDAGENTS) = (MAXAGENTS -
NUM_INITAGENTS)
Max no. of concurrent coordinating agents (MAXCAGENTS) = MAX_COORDAGENTS
Max number of client connections (MAX_CONNECTIONS) = MAX_COORDAGENTS

Keep fenced process (KEEPFENCED) = YES
Number of pooled fenced processes (FENCED_POOL) = MAX_COORDAGENTS
Initial number of fenced processes (NUM_INITFENCED) = 0

Index re-creation time and redo index build (INDEXREC) = RESTART

Transaction manager database name (TM_DATABASE) = 1ST_CONN
Transaction resync interval (sec) (RESYNC_INTERVAL) = 180

SPM name (SPM_NAME) =
SPM log size (SPM_LOG_FILE_SZ) = 256
SPM resync agent limit (SPM_MAX_RESYNC) = 20
SPM log path (SPM_LOG_PATH) =

TCP/IP Service name (SVCENAME) =
Discovery mode (DISCOVER) = SEARCH
Discover server instance (DISCOVER_INST) = ENABLE

Maximum query degree of parallelism (MAX_QUERYDEGREE) = ANY
Enable intra-partition parallelism (INTRA_PARALLEL) = NO

Maximum Asynchronous TQs per query (FEDERATED_ASYNC) = 0

No. of int. communication buffers(4KB)(FCM_NUM_BUFFERS) = AUTOMATIC
No. of int. communication channels (FCM_NUM_CHANNELS) = AUTOMATIC
Node connection elapse time (sec) (CONN_ELAPSE) = 10
Max number of node connection retries (MAX_CONNRETRIES) = 5

```

```
Max time difference between nodes (min) (MAX_TIME_DIFF) = 60
```

```
db2start/db2stop timeout (min) (START_STOP_TIME) = 10
```

aff2_sixteen_listener.cfg

```

<!-- This policy is valid -->
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<BUFFERPOOL_ID>68</BUFFERPOOL_ID>
<BUFFERPOOL_ID>84</BUFFERPOOL_ID>
<BUFFERPOOL_ID>100</BUFFERPOOL_ID>
<BUFFERPOOL_ID>116</BUFFERPOOL_ID>
</BUFFERPOOL_BINDING>
</RESOURCE_BINDING>

</DATABASE_RESOURCE_POLICY>
</RESOURCE_POLICY>

```

10.2. Transaction Monitor Parameters

inetInfo registry.reg

Windows Registry Editor Version 5.00

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\inetInfo\Parameters]
"ListenBackLog"=dword:00000040
"DispatchEntries"=hex(7):00,00,13,04,9d,3d,83,7c,40,9d,88,7c,cc,8b,13,04,00,00,\
00,00
"PoolThreadLimit"=dword:00000320
"MaxPoolThreads"=dword:000000c8
"MaxConcurrency"=dword:000000320

```

tcipip parameters registry.reg

Windows Registry Editor Version 5.00

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters]
"NV Hostname"="client2"
"DataBasePath"=hex(2):25,00,53,00,79,00,73,00,74,00,65,00,6d,00,52,00,6f,00,6f,\
00,74,00,25,00,5c,00,53,00,79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,00,\
64,00,72,00,69,00,76,00,65,00,72,00,73,00,5c,00,65,00,74,00,63,00,00,00
"NameServer"=""
"ForwardBroadcasts"=dword:00000000
"IPEnableRouter"=dword:00000000
"Domain"=""
"Hostname"="client2"
"SearchList"=""
"UseDomainNameDevolution"=dword:00000001
"EnableCMPRedirect"=dword:00000001
"DeadGWDetectDefault"=dword:00000001
"DontAddDefaultGatewayDefault"=dword:00000000
"EnableSecurityFilters"=dword:00000000
"EnableTCPA"=dword:00000001
"EnableRSS"=dword:00000001
"EnableTCPChimney"=dword:00000001
"SynAttackProtect"=dword:00000000

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Adapters]

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Adapters\NdisWanlp]
"LLInterface"="WANARP"
"IpConfig"=hex(7):54,00,63,00,70,00,69,00,70,00,5c,00,50,00,61,00,72,00,61,00,\
6d,00,65,00,74,00,65,00,72,00,73,00,5c,00,49,00,6e,00,74,00,65,00,72,00,66,\
00,61,00,63,00,65,00,73,00,5c,00,7b,00,32,00,30,00,45,00,35,00,37,00,35,00,\
38,00,43,00,2d,00,46,00,35,00,34,00,46,00,2d,00,34,00,43,00,31,00,45,00,2d,\
00,41,00,45,00,46,00,36,00,2d,00,38,00,37,00,32,00,37,00,30,00,34,00,41,00,\
43,00,41,00,36,00,38,00,42,00,7d,00,00,00,54,00,63,00,70,00,69,00,70,00,5c,\
00,50,00,61,00,72,00,61,00,6d,00,65,00,74,00,65,00,72,00,73,00,5c,00,49,00,\
6e,00,74,00,65,00,72,00,66,00,61,00,63,00,65,00,73,00,5c,00,7b,00,38,00,30,\
00,32,00,43,00,41,00,37,00,38,00,45,00,2d,00,34,00,38,00,32,00,35,00,2d,00,\
34,00,34,00,42,00,38,00,2d,00,39,00,36,00,32,00,36,00,2d,00,30,00,31,00,34,\
00,32,00,33,00,34,00,32,00,39,00,32,00,32,00,46,00,34,00,7d,00,00,00,00,00
"NumInterfaces"=dword:00000002
"IPInterfaces"=hex:8c,75,e5,20,4f,15,1e,4c,ae,f6,87,27,04,ac,a6,8b,8e,a7,2c,80,\
25,48,b8,44,96,26,01,42,34,29,22,f4

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Adapters\{2C482B80-E81F-4472-83B2-C606043D4069}]
"LLInterface"=""
"IpConfig"=hex(7):54,00,63,00,70,00,69,00,70,00,5c,00,50,00,61,00,72,00,61,00,\
6d,00,65,00,74,00,65,00,72,00,73,00,5c,00,49,00,6e,00,74,00,65,00,72,00,66,\
00,61,00,63,00,65,00,73,00,5c,00,7b,00,32,00,43,00,34,00,38,00,32,00,42,00,\
38,00,30,00,2d,00,45,00,38,00,31,00,46,00,2d,00,34,00,34,00,37,00,32,00,2d,\
00,38,00,33,00,42,00,32,00,2d,00,43,00,36,00,30,00,36,00,30,00,34,00,33,00,\
44,00,34,00,30,00,36,00,39,00,7d,00,00,00,00,00

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Adapters\{72844CD3-4B9F-4A3E-8169-F6771A71D2D0}]
"LLInterface"=""
"IpConfig"=hex(7):54,00,63,00,70,00,69,00,70,00,5c,00,50,00,61,00,72,00,61,00,\
6d,00,65,00,74,00,65,00,72,00,73,00,5c,00,49,00,6e,00,74,00,65,00,72,00,66,\
00,61,00,63,00,65,00,73,00,5c,00,7b,00,37,00,32,00,38,00,34,00,34,00,43,00,\

```

```

44,00,33,00,2d,00,34,00,42,00,39,00,46,00,2d,00,34,00,41,00,33,00,45,00,2d,\
00,38,00,31,00,36,00,39,00,2d,00,46,00,36,00,37,00,37,00,31,00,41,00,37,00,\
31,00,44,00,32,00,44,00,30,00,7d,00,00,00,00,00

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\DNSRegisteredAdapters]

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces]

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\{20E5758C-F54F-4C1E-AEF6-872704ACA68B}]
"UseZeroBroadcast"=dword:00000000
"EnableDHCP"=dword:00000000
"IPAddress"=hex(7):31,00,2e,00,30,00,2e,00,30,00,2e,00,30,00,00,00,00,00,00
"SubnetMask"=hex(7):30,00,2e,00,30,00,2e,00,30,00,2e,00,30,00,00,00,00,00
"DefaultGateway"=hex(7):00,00
"EnableDeadGWDetect"=dword:00000001
"DontAddDefaultGateway"=dword:00000000

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\{2C482B80-E81F-4472-83B2-C606043D4069}]

```

```

"UseZeroBroadcast"=dword:00000000
"EnableDeadGWDetect"=dword:00000001
"EnableDHCP"=dword:00000000
"IPAddress"=hex(7):31,00,39,00,32,00,2e,00,31,00,36,00,38,00,2e,00,31,00,31,00,\
2e,00,31,00,30,00,32,00,00,00,00,00,00
"SubnetMask"=hex(7):32,00,35,00,35,00,2e,00,32,00,35,00,35,00,2e,00,32,00,35,\
00,35,00,2e,00,30,00,00,00,00,00,00
"DefaultGateway"=hex(7):00,00
"DefaultGatewayMetric"=hex(7):00,00
"NameServer"=""
"Domain"=""
"RegistrationEnabled"=dword:00000001
"RegisterAdapterName"=dword:00000000
"TCPAllowedPorts"=hex(7):30,00,00,00,00,00,00
"UDPAllowedPorts"=hex(7):30,00,00,00,00,00
"RawIPAllowedProtocols"=hex(7):30,00,00,00,00,00,00
"NTEContextList"=hex(7):30,00,78,00,30,00,30,00,30,00,30,00,30,00,30,00,30,00,\
32,00,00,00,00,00
"DhcpClassIDBin"=hex:
"DhcpServer"="255.255.255.255"
"Lease"=dword:00000e10
"LeaseObtainedTime"=dword:45883c95
"T1"=dword:4588439d
"T2"=dword:458848e3
"LeaseTerminatesTime"=dword:45884aa5
"IPAutoconfigurationAddress"="0.0.0.0"
"IPAutoconfigurationMask"="255.255.0.0"
"IPAutoconfigurationSeed"=dword:00000000
"AddressType"=dword:00000000

```

```

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfaces\{72844CD3-4B9F-4A3E-8169-F6771A71D2D0}]

```

```

"UseZeroBroadcast"=dword:00000000
"EnableDeadGWDetect"=dword:00000001
"EnableDHCP"=dword:00000000
"IPAddress"=hex(7):31,00,30,00,2e,00,32,00,2e,00,31,00,2e,00,32,00,00,00,00,00
"SubnetMask"=hex(7):32,00,35,00,35,00,2e,00,32,00,35,00,35,00,2e,00,32,00,35,\
00,35,00,2e,00,30,00,00,00,00,00,00
"DefaultGateway"=hex(7):00,00
"DefaultGatewayMetric"=hex(7):00,00
"NameServer"=""
"Domain"=""
"RegistrationEnabled"=dword:00000001
"RegisterAdapterName"=dword:00000000
"TCPAllowedPorts"=hex(7):30,00,00,00,00,00,00
"UDPAllowedPorts"=hex(7):30,00,00,00,00,00
"RawIPAllowedProtocols"=hex(7):30,00,00,00,00,00
"NTEContextList"=hex(7):30,00,78,00,30,00,30,00,30,00,30,00,30,00,30,00,30,00,\

```

33,00,00,00,00,00
"DhcpClassIdBin"=hex:
"DhcpServer"=255.255.255.255"
"Lease"=dword:00000e10
"LeaseObtainedTime"=dword:45883c79
"T1"=dword:45884381
"T2"=dword:458848c7
"LeaseTerminatesTime"=dword:45884a89
"IPAutoconfigurationAddress"="0.0.0.0"
"IPAutoconfigurationMask"="255.255.0.0"
"IPAutoconfigurationSeed"=dword:00000000
"AddressType"=dword:00000000
"TcpWindowSize"=dword:00040000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Interfa
ces\{802CA78E-4825-44B8-9626-0142342922F4}]
"UseZeroBroadcast"=dword:00000000
"EnableDHCP"=dword:00000000
"IPAddress"=hex(7):30,00,2e,00,30,00,2e,00,30,00,2e,00,30,00,00,00,00,
"SubnetMask"=hex(7):30,00,2e,00,30,00,2e,00,30,00,2e,00,30,00,00,00,00,
"DefaultGateway"=hex(7):00,00,
"EnableDeadGWDetect"=dword:00000001
"DontAddDefaultGateway"=dword:00000000

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Persist
entRoutes]

[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters\Winso
ck]
"UseDelayedAcceptance"=dword:00000000
"HelperDllName"=hex(2):25,00,53,00,79,00,73,00,74,00,65,00,6d,00,52,00,6f,00,
6f,00,74,00,25,00,5c,00,53,00,79,00,73,00,74,00,65,00,6d,00,33,00,32,00,5c,
00,77,00,73,00,68,00,74,00,63,00,70,00,69,00,70,00,2e,00,64,00,6c,00,6c,00,
00,00
"MaxSockAddrLength"=dword:00000010
"MinSockAddrLength"=dword:00000010
"Mapping"=hex:0b,00,00,00,03,00,00,02,00,00,01,00,00,00,06,00,00,00,02,
00,00,00,01,00,00,00,00,00,02,00,00,00,00,00,00,00,06,00,00,00,00,
00,00,00,00,00,06,00,00,00,00,00,00,01,00,00,00,06,00,00,00,02,00,00,
00,02,00,00,00,11,00,00,02,00,00,00,02,00,00,00,00,00,00,02,00,00,00,
00,00,00,00,11,00,00,00,00,00,00,00,00,00,11,00,00,00,00,00,00,02,
00,00,00,11,00,00,00,02,00,00,00,03,00,00,00,00,00,00

tpccCom.tpcc_com settings.txt.txt

Windows Registry Editor Version 5.00

[HKEY_LOCAL_MACHINE\SOFTWARE\TPCC]
"dbInterfacePath"="C:\inetpub\wwwroot\tpcc\tpccdb2glue.dll"
"dbName"="tpcc"
"dbPassword"="tpcc"
"dbType"="DB2"
"dbUserName"="tpcc"
"divyLogPath"="C:\inetpub\wwwroot\tpcc"
"divyQueueLen"=dword:00004e20
"divyThreads"=dword:00000007
"errorLogFile"="c:\inetpub\wwwroot\tpcc\isapi_err.log"
"htmlTrace"=dword:00000000
"htmlTraceLogFile"="c:\inetpub\wwwroot\tpcc\isapi.log"
"isapi_trace"=dword:00000000
"nullDB"=dword:00000000
"numPools"=dword:00000001
"numServers"=dword:00000001
"numUsers"=dword:00007530
"numWarehouse"=dword:000007d0

tpcc software registry.reg client1

Transactions not supported

Enable Object pooling
Minimum pool size 72
Maximum pool size 72
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client2

Transactions not supported
Enable Object pooling
Minimum pool size 69
Maximum pool size 69
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client3

Transactions not supported
Enable Object pooling
Minimum pool size 71
Maximum pool size 71
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client4

Transactions not supported
Enable Object pooling
Minimum pool size 72
Maximum pool size 72
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client5

Transactions not supported
Enable Object pooling
Minimum pool size 72
Maximum pool size 72
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client6

Transactions not supported
Enable Object pooling
Minimum pool size 71
Maximum pool size 71
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client7

Transactions not supported
Enable Object pooling
Minimum pool size 70
Maximum pool size 70
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client8

Transactions not supported
Enable Object pooling
Minimum pool size 71
Maximum pool size 71
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client9

Transactions not supported
Enable Object pooling
Minimum pool size 70
Maximum pool size 70
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client10

Transactions not supported
Enable Object pooling
Minimum pool size 69
Maximum pool size 69
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client11

Transactions not supported
Enable Object pooling
Minimum pool size 70
Maximum pool size 70
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client12

Transactions not supported
Enable Object pooling
Minimum pool size 69
Maximum pool size 69
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client13

Transactions not supported
Enable Object pooling
Minimum pool size 69
Maximum pool size 69
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client14

Transactions not supported
Enable Object pooling
Minimum pool size 71
Maximum pool size 71
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client15

Transactions not supported
Enable Object pooling
Minimum pool size 71
Maximum pool size 71
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

tpcc software registry.reg client16

Transactions not supported
Enable Object pooling
Minimum pool size 70
Maximum pool size 70
Creation timeout 1,800,000,000
Enable Just in time activation
Concurrency Required

10.3. Linux Parameters

alloc hugepages.sh

```
#!/bin/bash  
  
echo 60100 > /proc/sys/vm/nr_hugepages
```

cmdline.txt

```
root=/dev/sda2 resume=/dev/sda1 selinux=0 audit=0 console=ttyS0,115200 elevator=noop  
splash=silent showopts migration_cost=1000000,1610,13327,24669
```

chrt-ififo2.sh

```
#!/bin/ksh  
  
for i in `ps -fu tpcc | grep db2loggl | awk '{print $2}'; do  
  chrt -f -p 97 $i  
done  
  
for j in `ps -fu tpcc | grep db2ag | awk '{print $2}'; do  
  chrt -f -p 96 $j  
done  
  
for k in `ps -fu tpcc | grep db2pclnr | awk '{print $2}'; do  
  chrt -f -p 96 $k  
done
```

zio.sh

```
echo 1000 > /sys/class/scsi_host/host24/zio_timer  
echo 1000 > /sys/class/scsi_host/host25/zio_timer  
echo 1000 > /sys/class/scsi_host/host26/zio_timer  
echo 1000 > /sys/class/scsi_host/host27/zio_timer  
echo 1000 > /sys/class/scsi_host/host28/zio_timer  
echo 1000 > /sys/class/scsi_host/host29/zio_timer  
echo 1000 > /sys/class/scsi_host/host30/zio_timer  
echo 1000 > /sys/class/scsi_host/host31/zio_timer  
echo 1000 > /sys/class/scsi_host/host32/zio_timer  
echo 1000 > /sys/class/scsi_host/host33/zio_timer  
echo 1000 > /sys/class/scsi_host/host34/zio_timer  
echo 1000 > /sys/class/scsi_host/host35/zio_timer
```

```
echo 1000 > /sys/class/scsi_host/host36/zio_timer  
echo 1000 > /sys/class/scsi_host/host37/zio_timer  
echo 1000 > /sys/class/scsi_host/host38/zio_timer  
echo 1000 > /sys/class/scsi_host/host39/zio_timer  
echo 1000 > /sys/class/scsi_host/host40/zio_timer  
echo 1000 > /sys/class/scsi_host/host41/zio_timer  
echo 1000 > /sys/class/scsi_host/host42/zio_timer  
echo 1000 > /sys/class/scsi_host/host43/zio_timer
```

```
echo 1 > /sys/class/scsi_host/host24/zio  
echo 1 > /sys/class/scsi_host/host25/zio  
echo 1 > /sys/class/scsi_host/host26/zio  
echo 1 > /sys/class/scsi_host/host27/zio  
echo 1 > /sys/class/scsi_host/host28/zio  
echo 1 > /sys/class/scsi_host/host29/zio  
echo 1 > /sys/class/scsi_host/host30/zio  
echo 1 > /sys/class/scsi_host/host31/zio  
echo 1 > /sys/class/scsi_host/host32/zio  
echo 1 > /sys/class/scsi_host/host33/zio  
echo 1 > /sys/class/scsi_host/host34/zio  
echo 1 > /sys/class/scsi_host/host35/zio  
echo 1 > /sys/class/scsi_host/host36/zio  
echo 1 > /sys/class/scsi_host/host37/zio  
echo 1 > /sys/class/scsi_host/host38/zio  
echo 1 > /sys/class/scsi_host/host39/zio  
echo 1 > /sys/class/scsi_host/host40/zio  
echo 1 > /sys/class/scsi_host/host41/zio  
echo 1 > /sys/class/scsi_host/host42/zio  
echo 1 > /sys/class/scsi_host/host43/zio
```

aff1.sh

```
#!/bin/ksh  
  
to_hex() {  
  if (($# == 0)); then  
    print "usage: to_hex <int> [<size>]"  
    return  
  fi  
  
  let int="${1}"  
  let size="${2:-0}" # length of output hex string.  
  
  set -A digit 0 1 2 3 4 5 6 7 8 9 a b c d e f  
  hex=""  
  
  while ((int > 0)); do  
    hex="${digit[${int % 16}]}${hex}"  
    int=$((int / 16))  
  done  
  
  if ((size != 0)); then  
    typeset -Z${size} zeros=0  
    typeset -R${size} hex="${zeros}${hex}"  
  fi  
  
  # print "${hex}"  
}  
  
for i in `ps -fu tpcc | grep db2pccm | awk '{print $2}'; do  
  cmd="taskset -p 0x0001 $i"  
  $cmd  
done  
  
typeset -i j  
j=3  
k=3  
  
for i in `ps -fu tpcc | grep db2tccm | awk '{print $2}'; do
```

```
if (($j > 805306368)); then  
  hex=c0000000  
else  
  to_hex $j  
fi  
cmd="taskset -p 0x${hex} $i"  
$cmd  
j=$((j*4));  
done
```

done

aff2.sh

```
#!/bin/ksh  
  
to_hex() {  
  if (($# == 0)); then  
    print "usage: to_hex <int> [<size>]"  
    return  
  fi  
  
  let int="${1}"  
  let size="${2:-0}" # length of output hex string.  
  
  set -A digit 0 1 2 3 4 5 6 7 8 9 a b c d e f  
  hex=""  
  
  while ((int > 0)); do  
    hex="${digit[${int % 16}]}${hex}"  
    int=$((int / 16))  
  done  
  
  if ((size != 0)); then  
    typeset -Z${size} zeros=0  
    typeset -R${size} hex="${zeros}${hex}"  
  fi  
  
  # print "${hex}"  
}  
  
for i in `ps -fu tpcc | grep db2loggl | awk '{print $2}'; do  
  cmd="taskset -p 0xffff0000 $i"  
  $cmd  
done  
  
j=3221225472  
print "Cleaners:"  
  
for i in `ps -fu tpcc | grep db2pclnr | awk '{print $2}'; do  
  if (($j > 805306368)); then  
    hex=c0000000  
  else  
    to_hex $j  
  fi  
  if (($j > 0)); then  
    cmd="taskset -p 0x${hex} $i"  
    $cmd  
    j=$((j/4));  
  else  
    echo "not changing affinity for pid $i"  
  fi  
done  
  
affinitize irqs.sh  
  
#!/bin/bash  
  
# chassis 1 - CPU's 0-15
```

```
# database storage - qllogic 4Gb ports
echo 00000000,00000000,00000000,00000002 > /proc/irq/177/smp_affinity # CPU 1
echo 00000000,00000000,00000000,00000004 > /proc/irq/185/smp_affinity # CPU 2
echo 00000000,00000000,00000000,00000010 > /proc/irq/193/smp_affinity # CPU 4
echo 00000000,00000000,00000000,00000020 > /proc/irq/201/smp_affinity # CPU 5
echo 00000000,00000000,00000000,00000080 > /proc/irq/209/smp_affinity # CPU 7
echo 00000000,00000000,00000000,00000100 > /proc/irq/217/smp_affinity # CPU 8
# database storage - qllogic 2Gb ports
echo 00000000,00000000,00000000,00000800 > /proc/irq/225/smp_affinity # CPU 11
echo 00000000,00000000,00000000,00001000 > /proc/irq/233/smp_affinity # CPU 12
echo 00000000,00000000,00000000,00004000 > /proc/irq/50/smp_affinity # CPU 14
echo 00000000,00000000,00000000,00008000 > /proc/irq/58/smp_affinity # CPU 15
# flat files - Emulex ports - just choose some unused CPU's
echo 00000000,00000000,00000000,00000200 > /proc/irq/154/smp_affinity # CPU 9
echo 00000000,00000000,00000000,00000400 > /proc/irq/162/smp_affinity # CPU 10
```

```
# chassis 2 - CPU's 16-31
```

```
# database storage - qllogic 4Gb ports
echo 00000000,00000000,00000000,00040000 > /proc/irq/66/smp_affinity # CPU 18
echo 00000000,00000000,00000000,00080000 > /proc/irq/74/smp_affinity # CPU 19
echo 00000000,00000000,00000000,00100000 > /proc/irq/82/smp_affinity # CPU 20
echo 00000000,00000000,00000000,00200000 > /proc/irq/90/smp_affinity # CPU 21
echo 00000000,00000000,00000000,00800000 > /proc/irq/98/smp_affinity # CPU 23
echo 00000000,00000000,00000000,01000000 > /proc/irq/106/smp_affinity # CPU 24
# database storage - qllogic 2Gb ports
echo 00000000,00000000,00000000,04000000 > /proc/irq/114/smp_affinity # CPU 26
echo 00000000,00000000,00000000,08000000 > /proc/irq/122/smp_affinity # CPU 27
echo 00000000,00000000,00000000,10000000 > /proc/irq/130/smp_affinity # CPU 28
echo 00000000,00000000,00000000,20000000 > /proc/irq/138/smp_affinity # CPU 29
# log - qllogic 2Gb port
echo 00000000,00000000,00000000,80000000 > /proc/irq/146/smp_affinity # CPU 31
```

```
/home/tpcc/affirq.sh
```

affirq.sh

```
#!/bin/ksh
```

```
# 192.168.11 network - top chassis
device= cat /proc/interrupts | grep eth9 | awk -F : '{print $1}'
print "eth9: echo 00000000,00000000,00000000,00020000 > /proc/irq/$device/smp_affinity"
echo "00000000,00000000,00000000,00020000" > /proc/irq/$device/smp_affinity
cat /proc/irq/$device/smp_affinity
```

```
# 192.168.12 network - bottom chassis
device= cat /proc/interrupts | grep eth11 | awk -F : '{print $1}'
print "eth11: echo 00000000,00000000,00000000,00010000 > /proc/irq/$device/smp_affinity"
echo "00000000,00000000,00000000,00010000" > /proc/irq/$device/smp_affinity
cat /proc/irq/$device/smp_affinity
```

doit

```
#!/bin/sh
```

```
# tune slab cache
/home/tpcc/tune_slab.sh
```

```
echo "affinitizing irq's"
/home/tpcc/tpc-c.ibm/affinitize_irqs.sh
```

```
sysctl -p
modprobe raw
sleep 5
/home/tpcc/tpc-c.ibm/setraw.sh
```

```
chmod -R 777 /dev/raw/raw*
```

```
modprobe capability disable=1
modprobe capability enable=1
```

```
umount /sys/kernel/debug
umount /sys/kernel/security
```

```
/home/tpcc/tpc-c.ibm/seteth.sh
```

tune_slab.sh

```
#!/bin/bash
```

```
echo "blkdev_requests 336 168 8" > /proc/slabinfo
echo "size-1024 216 108 8" > /proc/slabinfo
echo "scsi_cmd_cache 336 168 8" > /proc/slabinfo
echo "size-4096 168 84 8" > /proc/slabinfo
echo "sgpool-8 240 120 8" > /proc/slabinfo
echo "bio 240 120 8" > /proc/slabinfo
echo "kiocb 240 120 8" > /proc/slabinfo
echo "biovec-1 240 120 8" > /proc/slabinfo
```

/etc/sysctl.conf

```
# Disable response to broadcasts.
# You don't want yourself becoming a Smurf amplifier.
net.ipv4.icmp_echo_ignore_broadcasts = 1
# enable route verification on all interfaces
net.ipv4.conf.all.rp_filter = 1
kernel.sem = 250 256000 32 1024
kernel.msgmni = 2048
kernel.shmmax = 1073741824
kernel.shmall = 137438953472
fs.file-max = 524288
net.core.rmem_max = 131071
net.core.wmem_max = 131071
vm.hugetlb_shm_group = 102
```

setraw.sh

```
#!/bin/sh
modprobe raw
```

```
raw /dev/raw/raw1 /dev/sdb1
raw /dev/raw/raw2 /dev/sdc1
raw /dev/raw/raw3 /dev/sdd1
raw /dev/raw/raw4 /dev/sde1
raw /dev/raw/raw5 /dev/sdf1
raw /dev/raw/raw6 /dev/sdg1
raw /dev/raw/raw7 /dev/sdh1
raw /dev/raw/raw8 /dev/sdi1
raw /dev/raw/raw9 /dev/sdj1
raw /dev/raw/raw10 /dev/sdk1
raw /dev/raw/raw11 /dev/sdl1
raw /dev/raw/raw12 /dev/sdm1
raw /dev/raw/raw13 /dev/sdn1
raw /dev/raw/raw14 /dev/sdo1
raw /dev/raw/raw15 /dev/sdp1
raw /dev/raw/raw16 /dev/sdq1
raw /dev/raw/raw17 /dev/sdr1
raw /dev/raw/raw18 /dev/sds1
raw /dev/raw/raw19 /dev/sdt1
raw /dev/raw/raw20 /dev/sdu1
```

```
raw /dev/raw/raw21 /dev/sdv1
raw /dev/raw/raw22 /dev/sdw1
raw /dev/raw/raw23 /dev/sdx1
raw /dev/raw/raw24 /dev/sdy1
raw /dev/raw/raw25 /dev/sdz1
raw /dev/raw/raw26 /dev/sdaa1
raw /dev/raw/raw27 /dev/sdab1
raw /dev/raw/raw28 /dev/sdac1
raw /dev/raw/raw29 /dev/sdad1
raw /dev/raw/raw30 /dev/sdae1
raw /dev/raw/raw31 /dev/sdaf1
raw /dev/raw/raw32 /dev/sdag1
raw /dev/raw/raw33 /dev/sdah1
raw /dev/raw/raw34 /dev/sdai1
raw /dev/raw/raw35 /dev/sdaj1
raw /dev/raw/raw36 /dev/sdak1
raw /dev/raw/raw37 /dev/sdal1
raw /dev/raw/raw38 /dev/sdam1
raw /dev/raw/raw39 /dev/sdan1
raw /dev/raw/raw40 /dev/sdao1
raw /dev/raw/raw41 /dev/sdap1
raw /dev/raw/raw42 /dev/sdaq1
raw /dev/raw/raw43 /dev/sdar1
raw /dev/raw/raw44 /dev/sdas1
raw /dev/raw/raw45 /dev/sdat1
raw /dev/raw/raw46 /dev/sdau1
raw /dev/raw/raw47 /dev/sdav1
raw /dev/raw/raw48 /dev/sdaw1
raw /dev/raw/raw49 /dev/sdax1
raw /dev/raw/raw50 /dev/sday1
raw /dev/raw/raw51 /dev/sdaz1
raw /dev/raw/raw52 /dev/sdba1
raw /dev/raw/raw53 /dev/sdbb1
raw /dev/raw/raw54 /dev/sdbc1
raw /dev/raw/raw55 /dev/sdbd1
raw /dev/raw/raw56 /dev/sdbe1
raw /dev/raw/raw57 /dev/sdbf1
raw /dev/raw/raw58 /dev/sdbg1
raw /dev/raw/raw59 /dev/sdbh1
raw /dev/raw/raw60 /dev/sdbi1
raw /dev/raw/raw61 /dev/sdbj1
raw /dev/raw/raw62 /dev/sdbk1
raw /dev/raw/raw63 /dev/sdbl1
raw /dev/raw/raw64 /dev/sdbm1
raw /dev/raw/raw65 /dev/sdbn1
raw /dev/raw/raw66 /dev/sdbo1
raw /dev/raw/raw67 /dev/sdbp1
raw /dev/raw/raw68 /dev/sdbq1
raw /dev/raw/raw69 /dev/sdbr1
raw /dev/raw/raw70 /dev/sdbs1
raw /dev/raw/raw71 /dev/sdbt1
raw /dev/raw/raw72 /dev/sdbu1
raw /dev/raw/raw73 /dev/sdbv1
raw /dev/raw/raw74 /dev/sdbw1
raw /dev/raw/raw75 /dev/sdbx1
raw /dev/raw/raw76 /dev/sdbz1
raw /dev/raw/raw77 /dev/sdbz1
raw /dev/raw/raw78 /dev/sdca1
raw /dev/raw/raw79 /dev/sdcb1
raw /dev/raw/raw80 /dev/sdcc1

raw /dev/raw/raw81 /dev/sdb2
raw /dev/raw/raw82 /dev/sdc2
raw /dev/raw/raw83 /dev/sdd2
raw /dev/raw/raw84 /dev/sde2
raw /dev/raw/raw85 /dev/sdf2
raw /dev/raw/raw86 /dev/sdg2
raw /dev/raw/raw87 /dev/sdh2
raw /dev/raw/raw88 /dev/sdi2
raw /dev/raw/raw89 /dev/sdj2
```



```
raw /dev/raw/raw920 /dev/sdao13
raw /dev/raw/raw921 /dev/sdap13
raw /dev/raw/raw922 /dev/sdaq13
raw /dev/raw/raw923 /dev/sdar13
raw /dev/raw/raw924 /dev/sdas13
raw /dev/raw/raw925 /dev/sdat13
raw /dev/raw/raw926 /dev/sdau13
raw /dev/raw/raw927 /dev/sdav13
raw /dev/raw/raw928 /dev/sdaw13
raw /dev/raw/raw929 /dev/sdax13
raw /dev/raw/raw930 /dev/sday13
raw /dev/raw/raw931 /dev/sdaz13
raw /dev/raw/raw932 /dev/sdba13
raw /dev/raw/raw933 /dev/sdbb13
raw /dev/raw/raw934 /dev/sdbc13
raw /dev/raw/raw935 /dev/sdbd13
raw /dev/raw/raw936 /dev/sdbe13
raw /dev/raw/raw937 /dev/sdbf13
raw /dev/raw/raw938 /dev/sdbg13
raw /dev/raw/raw939 /dev/sdbh13
raw /dev/raw/raw940 /dev/sdbi13
raw /dev/raw/raw941 /dev/sdbj13
raw /dev/raw/raw942 /dev/sdbk13
raw /dev/raw/raw943 /dev/sdbl13
raw /dev/raw/raw944 /dev/sdbm13
raw /dev/raw/raw945 /dev/sdbn13
raw /dev/raw/raw946 /dev/sdbo13
raw /dev/raw/raw947 /dev/sdbp13
raw /dev/raw/raw948 /dev/sdbq13
raw /dev/raw/raw949 /dev/sdb13
raw /dev/raw/raw950 /dev/sdbs13
raw /dev/raw/raw951 /dev/sdbt13
raw /dev/raw/raw952 /dev/sdbu13
raw /dev/raw/raw953 /dev/sdbv13
raw /dev/raw/raw954 /dev/sdbw13
raw /dev/raw/raw955 /dev/sdbx13
raw /dev/raw/raw956 /dev/sdb13
raw /dev/raw/raw957 /dev/sdbz13
raw /dev/raw/raw958 /dev/sdca13
raw /dev/raw/raw959 /dev/sdcb13
raw /dev/raw/raw960 /dev/sdcc13
```

```
raw /dev/raw/raw1300 /dev/sdcd
```

```
sleep 10
```

```
chmod 777 /dev/raw/raw*
```

version.txt

```
Linux itcopus82 2.6.16.21-0.8-smp #1 SMP Mon Jul 3 18:25:39 UTC 2006 x86_64 x86_64
x86_64 GNU/Linux
```

seteth.sh

```
ethtool -C eth9 tx-usecs 160 tx-frames 0 rx-usecs 300 rx-frames 0
ethtool -C eth11 tx-usecs 160 tx-frames 0 rx-usecs 300 rx-frames 0
```



```

DROP INDEX ORDR_IDXB61;
CREATE INDEX ORDR_IDXB61
    ON ORDERS61(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB62;
CREATE INDEX ORDR_IDXB62
    ON ORDERS62(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB63;
CREATE INDEX ORDR_IDXB63
    ON ORDERS63(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB64;
CREATE INDEX ORDR_IDXB64
    ON ORDERS64(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB65;
CREATE INDEX ORDR_IDXB65
    ON ORDERS65(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB66;
CREATE INDEX ORDR_IDXB66
    ON ORDERS66(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB67;
CREATE INDEX ORDR_IDXB67
    ON ORDERS67(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB68;
CREATE INDEX ORDR_IDXB68
    ON ORDERS68(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB69;
CREATE INDEX ORDR_IDXB69
    ON ORDERS69(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB70;
CREATE INDEX ORDR_IDXB70
    ON ORDERS70(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB71;
CREATE INDEX ORDR_IDXB71
    ON ORDERS71(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB72;
CREATE INDEX ORDR_IDXB72
    ON ORDERS72(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;

```

```

connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB73;
CREATE INDEX ORDR_IDXB73
    ON ORDERS73(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB74;
CREATE INDEX ORDR_IDXB74
    ON ORDERS74(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB75;
CREATE INDEX ORDR_IDXB75
    ON ORDERS75(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB76;
CREATE INDEX ORDR_IDXB76
    ON ORDERS76(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB77;
CREATE INDEX ORDR_IDXB77
    ON ORDERS77(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB78;
CREATE INDEX ORDR_IDXB78
    ON ORDERS78(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB79;
CREATE INDEX ORDR_IDXB79
    ON ORDERS79(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;
connect to TPCC in share mode;
DROP INDEX ORDR_IDXB80;
CREATE INDEX ORDR_IDXB80
    ON ORDERS80(O_C_ID, O_W_ID, O_D_ID, O_ID DESC) PCTFREE 20;
LEVEL2 PCTFREE 20;
connect reset;

```

DDL/CRTB_CUSTOMER.ddl

```

connect to TPCC in share mode;
DROP TABLE CUSTOMER1;
CREATE TABLE CUSTOMER1
(
    C_ID          INTEGER      NOT NULL,
    C_STATE      CHAR(2)      NOT NULL,
    C_ZIP        CHAR(9)      NOT NULL,
    C_PHONE      CHAR(16)     NOT NULL,
    C_SINCE      TIMESTAMP    NOT NULL,
    C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
    C_MIDDLE     CHAR(2)      NOT NULL,
    C_CREDIT     CHAR(2)      NOT NULL,
    C_DISCOUNT  REAL         NOT NULL,
    C_DATA       VARCHAR(500) NOT NULL,
    C_LAST       VARCHAR(16)  NOT NULL,
    C_FIRST      VARCHAR(16)  NOT NULL,
    C_STREET_1   VARCHAR(20)  NOT NULL,

```

```

C_STREET_2   VARCHAR(20)  NOT NULL,
C_CITY        VARCHAR(20)  NOT NULL,
C_D_ID        SMALLINT     NOT NULL,
C_W_ID        INTEGER      NOT NULL,
C_DELIVERY_CNT INTEGER      NOT NULL,
C_BALANCE     DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER      NOT NULL
)
IN ts_customer_001
INDEX IN is_customer_001
ORGANIZE BY KEY SEQUENCE (
    C_ID STARTING FROM 1 ENDING AT 3000,
    C_W_ID STARTING FROM 1 ENDING AT 520,
    C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER2;
CREATE TABLE CUSTOMER2
(
    C_ID          INTEGER      NOT NULL,
    C_STATE      CHAR(2)      NOT NULL,
    C_ZIP        CHAR(9)      NOT NULL,
    C_PHONE      CHAR(16)     NOT NULL,
    C_SINCE      TIMESTAMP    NOT NULL,
    C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
    C_MIDDLE     CHAR(2)      NOT NULL,
    C_CREDIT     CHAR(2)      NOT NULL,
    C_DISCOUNT  REAL         NOT NULL,
    C_DATA       VARCHAR(500) NOT NULL,
    C_LAST       VARCHAR(16)  NOT NULL,
    C_FIRST      VARCHAR(16)  NOT NULL,
    C_STREET_1   VARCHAR(20)  NOT NULL,
    C_STREET_2   VARCHAR(20)  NOT NULL,
    C_CITY        VARCHAR(20)  NOT NULL,
    C_D_ID        SMALLINT     NOT NULL,
    C_W_ID        INTEGER      NOT NULL,
    C_DELIVERY_CNT INTEGER      NOT NULL,
    C_BALANCE     DECIMAL(12,2) NOT NULL,
    C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
    C_PAYMENT_CNT INTEGER      NOT NULL
)
IN ts_customer_002
INDEX IN is_customer_002
ORGANIZE BY KEY SEQUENCE (
    C_ID STARTING FROM 1 ENDING AT 3000,
    C_W_ID STARTING FROM 521 ENDING AT 1040,
    C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER3;
CREATE TABLE CUSTOMER3
(
    C_ID          INTEGER      NOT NULL,
    C_STATE      CHAR(2)      NOT NULL,
    C_ZIP        CHAR(9)      NOT NULL,
    C_PHONE      CHAR(16)     NOT NULL,
    C_SINCE      TIMESTAMP    NOT NULL,
    C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
    C_MIDDLE     CHAR(2)      NOT NULL,
    C_CREDIT     CHAR(2)      NOT NULL,
    C_DISCOUNT  REAL         NOT NULL,
    C_DATA       VARCHAR(500) NOT NULL,
    C_LAST       VARCHAR(16)  NOT NULL,
    C_FIRST      VARCHAR(16)  NOT NULL,
    C_STREET_1   VARCHAR(20)  NOT NULL,

```



```

C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_057
INDEX IN is_customer_057
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 29121 ENDING AT 29640,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER58;
CREATE TABLE CUSTOMER58

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,
C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_058
INDEX IN is_customer_058
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 29641 ENDING AT 30160,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER59;
CREATE TABLE CUSTOMER59

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,

```

```

C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_059
INDEX IN is_customer_059
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 30161 ENDING AT 30680,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER60;
CREATE TABLE CUSTOMER60

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,
C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_060
INDEX IN is_customer_060
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 30681 ENDING AT 31200,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER61;
CREATE TABLE CUSTOMER61

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,

```

```

C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_061
INDEX IN is_customer_061
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 31201 ENDING AT 31720,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER62;
CREATE TABLE CUSTOMER62

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,
C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_062
INDEX IN is_customer_062
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 31721 ENDING AT 32240,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER63;
CREATE TABLE CUSTOMER63

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,

```



```

C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_075
INDEX IN is_customer_075
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 38481 ENDING AT 39000,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER76;
CREATE TABLE CUSTOMER76

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,
C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_076
INDEX IN is_customer_076
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 39001 ENDING AT 39520,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER77;
CREATE TABLE CUSTOMER77

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,

```

```

C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_077
INDEX IN is_customer_077
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 39521 ENDING AT 40040,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER78;
CREATE TABLE CUSTOMER78

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,
C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_078
INDEX IN is_customer_078
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 40041 ENDING AT 40560,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER79;
CREATE TABLE CUSTOMER79

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,

```

```

C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_079
INDEX IN is_customer_079
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 40561 ENDING AT 41080,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE CUSTOMER80;
CREATE TABLE CUSTOMER80

```

```

(
C_ID INTEGER NOT NULL,
C_STATE CHAR(2) NOT NULL,
C_ZIP CHAR(9) NOT NULL,
C_PHONE CHAR(16) NOT NULL,
C_SINCE TIMESTAMP NOT NULL,
C_CREDIT_LIM DECIMAL(12,2) NOT NULL,
C_MIDDLE CHAR(2) NOT NULL,
C_CREDIT CHAR(2) NOT NULL,
C_DISCOUNT REAL NOT NULL,
C_DATA VARCHAR(500) NOT NULL,
C_LAST VARCHAR(16) NOT NULL,
C_FIRST VARCHAR(16) NOT NULL,
C_STREET_1 VARCHAR(20) NOT NULL,
C_STREET_2 VARCHAR(20) NOT NULL,
C_CITY VARCHAR(20) NOT NULL,
C_D_ID SMALLINT NOT NULL,
C_W_ID INTEGER NOT NULL,
C_DELIVERY_CNT INTEGER NOT NULL,
C_BALANCE DECIMAL(12,2) NOT NULL,
C_YTD_PAYMENT DECIMAL(12,2) NOT NULL,
C_PAYMENT_CNT INTEGER NOT NULL
)
IN ts_customer_080
INDEX IN is_customer_080
ORGANIZE BY KEY SEQUENCE (
C_ID STARTING FROM 1 ENDING AT 3000,
C_W_ID STARTING FROM 41081 ENDING AT 41600,
C_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

```

```

connect reset;

```

DDL/CRTB_DISTRICT.ddl

```

connect to TPCC in share mode;
DROP TABLE DISTRICT1;
CREATE TABLE DISTRICT1

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,

```

```

D_W_ID INTEGER NOT NULL
)
IN ts_dis_001
INDEX IN ts_dis_001
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 1 ENDING AT 520
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT2;
CREATE TABLE DISTRICT2
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_002
INDEX IN ts_dis_002
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 521 ENDING AT 1040
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT3;
CREATE TABLE DISTRICT3
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_003
INDEX IN ts_dis_003
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 1041 ENDING AT 1560
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT4;
CREATE TABLE DISTRICT4
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,

```

```

D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_004
INDEX IN ts_dis_004
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 1561 ENDING AT 2080
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT5;
CREATE TABLE DISTRICT5
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_005
INDEX IN ts_dis_005
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 2081 ENDING AT 2600
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT6;
CREATE TABLE DISTRICT6
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_006
INDEX IN ts_dis_006
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 2601 ENDING AT 3120
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT7;
CREATE TABLE DISTRICT7
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,

```

```

D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_007
INDEX IN ts_dis_007
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 3121 ENDING AT 3640
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT8;
CREATE TABLE DISTRICT8
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_008
INDEX IN ts_dis_008
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 3641 ENDING AT 4160
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT9;
CREATE TABLE DISTRICT9
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_009
INDEX IN ts_dis_009
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 4161 ENDING AT 4680
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT10;
CREATE TABLE DISTRICT10
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,

```



```

CREATE TABLE DISTRICT19
(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_019
INDEX IN ts_dis_019
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 9361 ENDING AT 9880
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT20;
CREATE TABLE DISTRICT20

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_020
INDEX IN ts_dis_020
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 9881 ENDING AT 10400
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT21;
CREATE TABLE DISTRICT21

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_021
INDEX IN ts_dis_021
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 10401 ENDING AT 10920
)
ALLOW OVERFLOW;

```

```

connect reset;

```

```

connect to TPCC in share mode;
DROP TABLE DISTRICT22;
CREATE TABLE DISTRICT22

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_022
INDEX IN ts_dis_022
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 10921 ENDING AT 11440
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT23;
CREATE TABLE DISTRICT23

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_023
INDEX IN ts_dis_023
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 11441 ENDING AT 11960
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT24;
CREATE TABLE DISTRICT24

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_024
INDEX IN ts_dis_024
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 11961 ENDING AT 12480
)

```

```

ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT25;
CREATE TABLE DISTRICT25

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_025
INDEX IN ts_dis_025
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 12481 ENDING AT 13000
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT26;
CREATE TABLE DISTRICT26

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_026
INDEX IN ts_dis_026
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 13001 ENDING AT 13520
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT27;
CREATE TABLE DISTRICT27

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_027
INDEX IN ts_dis_027
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,

```

```

D_W_ID STARTING FROM 13521 ENDING AT 14040
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT28;
CREATE TABLE DISTRICT28
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_028
INDEX IN ts_dis_028
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 14041 ENDING AT 14560
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT29;
CREATE TABLE DISTRICT29
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_029
INDEX IN ts_dis_029
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 14561 ENDING AT 15080
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT30;
CREATE TABLE DISTRICT30
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_030
INDEX IN ts_dis_030

```

```

ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 15081 ENDING AT 15600
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT31;
CREATE TABLE DISTRICT31
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_031
INDEX IN ts_dis_031
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 15601 ENDING AT 16120
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT32;
CREATE TABLE DISTRICT32
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_032
INDEX IN ts_dis_032
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 16121 ENDING AT 16640
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT33;
CREATE TABLE DISTRICT33
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_033
INDEX IN ts_dis_033
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 16641 ENDING AT 17160
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT34;
CREATE TABLE DISTRICT34
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_034
INDEX IN ts_dis_034
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 17161 ENDING AT 17680
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT35;
CREATE TABLE DISTRICT35
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_035
INDEX IN ts_dis_035
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 17681 ENDING AT 18200
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT36;
CREATE TABLE DISTRICT36
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,

```



```

D_W_ID INTEGER NOT NULL
)
IN ts_dis_036
INDEX IN ts_dis_036
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 18201 ENDING AT 18720
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT37;
CREATE TABLE DISTRICT37

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_037
INDEX IN ts_dis_037
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 18721 ENDING AT 19240
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT38;
CREATE TABLE DISTRICT38
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_038
INDEX IN ts_dis_038
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 19241 ENDING AT 19760
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT39;
CREATE TABLE DISTRICT39
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,

```

```

D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_039
INDEX IN ts_dis_039
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 19761 ENDING AT 20280
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT40;
CREATE TABLE DISTRICT40
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_040
INDEX IN ts_dis_040
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 20281 ENDING AT 20800
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT41;
CREATE TABLE DISTRICT41
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_041
INDEX IN ts_dis_041
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 20801 ENDING AT 21320
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT42;
CREATE TABLE DISTRICT42
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,

```

```

D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_042
INDEX IN ts_dis_042
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 21321 ENDING AT 21840
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT43;
CREATE TABLE DISTRICT43
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_043
INDEX IN ts_dis_043
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 21841 ENDING AT 22360
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT44;
CREATE TABLE DISTRICT44
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_044
INDEX IN ts_dis_044
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 22361 ENDING AT 22880
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT45;
CREATE TABLE DISTRICT45
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,

```

```

D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_045
INDEX IN ts_dis_045
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 22881 ENDING AT 23400
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT46;
CREATE TABLE DISTRICT46

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_046
INDEX IN ts_dis_046
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 23401 ENDING AT 23920
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT47;
CREATE TABLE DISTRICT47

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_047
INDEX IN ts_dis_047
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 23921 ENDING AT 24440
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT48;
CREATE TABLE DISTRICT48

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,

```

```

D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_048
INDEX IN ts_dis_048
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 24441 ENDING AT 24960
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT49;
CREATE TABLE DISTRICT49

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_049
INDEX IN ts_dis_049
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 24961 ENDING AT 25480
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT50;
CREATE TABLE DISTRICT50

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_050
INDEX IN ts_dis_050
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 25481 ENDING AT 26000
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT51;
CREATE TABLE DISTRICT51

```

```

(

```

```

D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_051
INDEX IN ts_dis_051
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 26001 ENDING AT 26520
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT52;
CREATE TABLE DISTRICT52

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_052
INDEX IN ts_dis_052
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 26521 ENDING AT 27040
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT53;
CREATE TABLE DISTRICT53

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_053
INDEX IN ts_dis_053
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 27041 ENDING AT 27560
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT54;

```

```

CREATE TABLE DISTRICT54
(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_054
INDEX IN ts_dis_054
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 27561 ENDING AT 28080
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT55;
CREATE TABLE DISTRICT55

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_055
INDEX IN ts_dis_055
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 28081 ENDING AT 28600
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT56;
CREATE TABLE DISTRICT56

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_056
INDEX IN ts_dis_056
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 28601 ENDING AT 29120
)
ALLOW OVERFLOW;

```

```

connect reset;

```

```

connect to TPCC in share mode;
DROP TABLE DISTRICT57;
CREATE TABLE DISTRICT57

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_057
INDEX IN ts_dis_057
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 29121 ENDING AT 29640
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT58;
CREATE TABLE DISTRICT58

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_058
INDEX IN ts_dis_058
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 29641 ENDING AT 30160
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT59;
CREATE TABLE DISTRICT59

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_059
INDEX IN ts_dis_059
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 30161 ENDING AT 30680
)

```

```

ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT60;
CREATE TABLE DISTRICT60

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_060
INDEX IN ts_dis_060
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 30681 ENDING AT 31200
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT61;
CREATE TABLE DISTRICT61

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_061
INDEX IN ts_dis_061
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,
  D_W_ID STARTING FROM 31201 ENDING AT 31720
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT62;
CREATE TABLE DISTRICT62

```

```

(
  D_NEXT_O_ID INTEGER NOT NULL,
  D_TAX REAL NOT NULL,
  D_YTD DECIMAL(12,2) NOT NULL,
  D_NAME CHAR(10) NOT NULL,
  D_STREET_1 CHAR(20) NOT NULL,
  D_STREET_2 CHAR(20) NOT NULL,
  D_CITY CHAR(20) NOT NULL,
  D_STATE CHAR(2) NOT NULL,
  D_ZIP CHAR(9) NOT NULL,
  D_ID SMALLINT NOT NULL,
  D_W_ID INTEGER NOT NULL
)
IN ts_dis_062
INDEX IN ts_dis_062
ORGANIZE BY KEY SEQUENCE (
  D_ID STARTING FROM 1 ENDING AT 10,

```

```

D_W_ID STARTING FROM 31721 ENDING AT 32240
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT63;
CREATE TABLE DISTRICT63
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_063
INDEX IN ts_dis_063
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 32241 ENDING AT 32760
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT64;
CREATE TABLE DISTRICT64
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_064
INDEX IN ts_dis_064
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 32761 ENDING AT 33280
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT65;
CREATE TABLE DISTRICT65
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_065
INDEX IN ts_dis_065

```

```

ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 33281 ENDING AT 33800
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT66;
CREATE TABLE DISTRICT66
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_066
INDEX IN ts_dis_066
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 33801 ENDING AT 34320
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT67;
CREATE TABLE DISTRICT67
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_067
INDEX IN ts_dis_067
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 34321 ENDING AT 34840
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT68;
CREATE TABLE DISTRICT68
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)

```

```

IN ts_dis_068
INDEX IN ts_dis_068
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 34841 ENDING AT 35360
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT69;
CREATE TABLE DISTRICT69
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_069
INDEX IN ts_dis_069
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 35361 ENDING AT 35880
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT70;
CREATE TABLE DISTRICT70
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_070
INDEX IN ts_dis_070
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 35881 ENDING AT 36400
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT71;
CREATE TABLE DISTRICT71
(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,

```

```

D_W_ID INTEGER NOT NULL
)
IN ts_dis_071
INDEX IN ts_dis_071
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 36401 ENDING AT 36920
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT72;
CREATE TABLE DISTRICT72

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_072
INDEX IN ts_dis_072
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 36921 ENDING AT 37440
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT73;
CREATE TABLE DISTRICT73

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_073
INDEX IN ts_dis_073
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 37441 ENDING AT 37960
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT74;
CREATE TABLE DISTRICT74

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,

```

```

D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_074
INDEX IN ts_dis_074
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 37961 ENDING AT 38480
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT75;
CREATE TABLE DISTRICT75

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_075
INDEX IN ts_dis_075
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 38481 ENDING AT 39000
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT76;
CREATE TABLE DISTRICT76

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_076
INDEX IN ts_dis_076
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 39001 ENDING AT 39520
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT77;
CREATE TABLE DISTRICT77

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,

```

```

D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_077
INDEX IN ts_dis_077
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 39521 ENDING AT 40040
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT78;
CREATE TABLE DISTRICT78

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_078
INDEX IN ts_dis_078
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 40041 ENDING AT 40560
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT79;
CREATE TABLE DISTRICT79

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,
D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_079
INDEX IN ts_dis_079
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 40561 ENDING AT 41080
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE DISTRICT80;
CREATE TABLE DISTRICT80

```

```

(
D_NEXT_O_ID INTEGER NOT NULL,
D_TAX REAL NOT NULL,
D_YTD DECIMAL(12,2) NOT NULL,
D_NAME CHAR(10) NOT NULL,

```

```

D_STREET_1 CHAR(20) NOT NULL,
D_STREET_2 CHAR(20) NOT NULL,
D_CITY CHAR(20) NOT NULL,
D_STATE CHAR(2) NOT NULL,
D_ZIP CHAR(9) NOT NULL,
D_ID SMALLINT NOT NULL,
D_W_ID INTEGER NOT NULL
)
IN ts_dis_080
INDEX IN ts_dis_080
ORGANIZE BY KEY SEQUENCE (
D_ID STARTING FROM 1 ENDING AT 10,
D_W_ID STARTING FROM 41081 ENDING AT 41600
)
ALLOW OVERFLOW;

```

connect reset;

DDL/CRTB_HISTORY.ddl

```

connect to TPCC in share mode; connect to TPCC in share mode;
DROP TABLE HISTORY1;
CREATE TABLE HISTORY1

```

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_001
INDEX IN ts_history_001;

```

ALTER TABLE HISTORY1 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY2;

CREATE TABLE HISTORY2

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_002
INDEX IN ts_history_002;

```

ALTER TABLE HISTORY2 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY3;

CREATE TABLE HISTORY3

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_003
INDEX IN ts_history_003;

```

ALTER TABLE HISTORY3 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY4;

CREATE TABLE HISTORY4

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_004
INDEX IN ts_history_004;

```

ALTER TABLE HISTORY4 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY5;

CREATE TABLE HISTORY5

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_005
INDEX IN ts_history_005;

```

ALTER TABLE HISTORY5 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY6;

CREATE TABLE HISTORY6

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_006
INDEX IN ts_history_006;

```

ALTER TABLE HISTORY6 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY7;

CREATE TABLE HISTORY7

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_007
INDEX IN ts_history_007;

```

ALTER TABLE HISTORY7 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY8;

CREATE TABLE HISTORY8

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_008
INDEX IN ts_history_008;

```

ALTER TABLE HISTORY8 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY9;

CREATE TABLE HISTORY9

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_009
INDEX IN ts_history_009;

```

ALTER TABLE HISTORY9 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY10;

CREATE TABLE HISTORY10

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_010
INDEX IN ts_history_010;

```

ALTER TABLE HISTORY10 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY11;

CREATE TABLE HISTORY11

```

(
H_C_ID INTEGER NOT NULL,
H_C_D_ID SMALLINT NOT NULL,
H_C_W_ID INTEGER NOT NULL,
H_D_ID SMALLINT NOT NULL,
H_W_ID INTEGER NOT NULL,
H_DATE TIMESTAMP NOT NULL,
H_AMOUNT DECIMAL(6,2) NOT NULL,
H_DATA CHAR(24) NOT NULL
)

```

```

IN ts_history_011
INDEX IN ts_history_011;

```

ALTER TABLE HISTORY11 APPEND ON;

connect reset;

connect to TPCC in share mode;

DROP TABLE HISTORY12;

CREATE TABLE HISTORY12

```

(

```



```

connect to TPCC in share mode;
DROP TABLE HISTORY74;
CREATE TABLE HISTORY74
(
  H_C_ID      INTEGER NOT NULL,
  H_C_D_ID    SMALLINT NOT NULL,
  H_C_W_ID    INTEGER NOT NULL,
  H_D_ID      SMALLINT NOT NULL,
  H_W_ID      INTEGER NOT NULL,
  H_DATE      TIMESTAMP NOT NULL,
  H_AMOUNT    DECIMAL(6,2) NOT NULL,
  H_DATA      CHAR(24) NOT NULL
)
IN ts_history_074
INDEX IN ts_history_074;
ALTER TABLE HISTORY74 APPEND ON;
connect reset;
connect to TPCC in share mode;
DROP TABLE HISTORY75;
CREATE TABLE HISTORY75
(
  H_C_ID      INTEGER NOT NULL,
  H_C_D_ID    SMALLINT NOT NULL,
  H_C_W_ID    INTEGER NOT NULL,
  H_D_ID      SMALLINT NOT NULL,
  H_W_ID      INTEGER NOT NULL,
  H_DATE      TIMESTAMP NOT NULL,
  H_AMOUNT    DECIMAL(6,2) NOT NULL,
  H_DATA      CHAR(24) NOT NULL
)
IN ts_history_075
INDEX IN ts_history_075;
ALTER TABLE HISTORY75 APPEND ON;
connect reset;
connect to TPCC in share mode;
DROP TABLE HISTORY76;
CREATE TABLE HISTORY76
(
  H_C_ID      INTEGER NOT NULL,
  H_C_D_ID    SMALLINT NOT NULL,
  H_C_W_ID    INTEGER NOT NULL,
  H_D_ID      SMALLINT NOT NULL,
  H_W_ID      INTEGER NOT NULL,
  H_DATE      TIMESTAMP NOT NULL,
  H_AMOUNT    DECIMAL(6,2) NOT NULL,
  H_DATA      CHAR(24) NOT NULL
)
IN ts_history_076
INDEX IN ts_history_076;
ALTER TABLE HISTORY76 APPEND ON;
connect reset;
connect to TPCC in share mode;
DROP TABLE HISTORY77;
CREATE TABLE HISTORY77
(
  H_C_ID      INTEGER NOT NULL,
  H_C_D_ID    SMALLINT NOT NULL,
  H_C_W_ID    INTEGER NOT NULL,
  H_D_ID      SMALLINT NOT NULL,
  H_W_ID      INTEGER NOT NULL,
  H_DATE      TIMESTAMP NOT NULL,
  H_AMOUNT    DECIMAL(6,2) NOT NULL,
  H_DATA      CHAR(24) NOT NULL
)
IN ts_history_077
INDEX IN ts_history_077;
ALTER TABLE HISTORY77 APPEND ON;
connect reset;
connect to TPCC in share mode;
DROP TABLE HISTORY78;

```

```

CREATE TABLE HISTORY78
(
  H_C_ID      INTEGER NOT NULL,
  H_C_D_ID    SMALLINT NOT NULL,
  H_C_W_ID    INTEGER NOT NULL,
  H_D_ID      SMALLINT NOT NULL,
  H_W_ID      INTEGER NOT NULL,
  H_DATE      TIMESTAMP NOT NULL,
  H_AMOUNT    DECIMAL(6,2) NOT NULL,
  H_DATA      CHAR(24) NOT NULL
)
IN ts_history_078
INDEX IN ts_history_078;
ALTER TABLE HISTORY78 APPEND ON;
connect reset;
connect to TPCC in share mode;
DROP TABLE HISTORY79;
CREATE TABLE HISTORY79
(
  H_C_ID      INTEGER NOT NULL,
  H_C_D_ID    SMALLINT NOT NULL,
  H_C_W_ID    INTEGER NOT NULL,
  H_D_ID      SMALLINT NOT NULL,
  H_W_ID      INTEGER NOT NULL,
  H_DATE      TIMESTAMP NOT NULL,
  H_AMOUNT    DECIMAL(6,2) NOT NULL,
  H_DATA      CHAR(24) NOT NULL
)
IN ts_history_079
INDEX IN ts_history_079;
ALTER TABLE HISTORY79 APPEND ON;
connect reset;
connect to TPCC in share mode;
DROP TABLE HISTORY80;
CREATE TABLE HISTORY80
(
  H_C_ID      INTEGER NOT NULL,
  H_C_D_ID    SMALLINT NOT NULL,
  H_C_W_ID    INTEGER NOT NULL,
  H_D_ID      SMALLINT NOT NULL,
  H_W_ID      INTEGER NOT NULL,
  H_DATE      TIMESTAMP NOT NULL,
  H_AMOUNT    DECIMAL(6,2) NOT NULL,
  H_DATA      CHAR(24) NOT NULL
)
IN ts_history_080
INDEX IN ts_history_080;
ALTER TABLE HISTORY80 APPEND ON;
connect reset;

DDL/CRTB ITEM.ddl

connect to TPCC in share mode;
DROP TABLE ITEM;
CREATE TABLE ITEM
(
  I_NAME      CHAR(24) NOT NULL,
  I_PRICE     DECIMAL(5,2) NOT NULL,
  I_DATA      VARCHAR(50) NOT NULL,
  I_IM_ID     INTEGER NOT NULL,
  I_ID        INTEGER NOT NULL
)
IN ts_item
INDEX IN ts_item
ORGANIZE BY KEY SEQUENCE (
  I_ID STARTING FROM 1 ENDING AT 10000
)
ALLOW OVERFLOW;
ALTER TABLE ITEM LOCKSIZE TABLE;

```

```

connect reset;

DDL/CRTB NEW ORDERA.ddl

connect to TPCC in share mode;
DROP TABLE NEW_ORDERA1;
CREATE TABLE NEW_ORDERA1
(
  NO_O_ID     INTEGER NOT NULL,
  NO_D_ID     SMALLINT NOT NULL,
  NO_W_ID     INTEGER NOT NULL
)
IN ts_newordA_001
INDEX IN ts_newordA_001
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 1 ENDING AT 520,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA2;
CREATE TABLE NEW_ORDERA2
(
  NO_O_ID     INTEGER NOT NULL,
  NO_D_ID     SMALLINT NOT NULL,
  NO_W_ID     INTEGER NOT NULL
)
IN ts_newordA_002
INDEX IN ts_newordA_002
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 521 ENDING AT 1040,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA3;
CREATE TABLE NEW_ORDERA3
(
  NO_O_ID     INTEGER NOT NULL,
  NO_D_ID     SMALLINT NOT NULL,
  NO_W_ID     INTEGER NOT NULL
)
IN ts_newordA_003
INDEX IN ts_newordA_003
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 1041 ENDING AT 1560,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA4;
CREATE TABLE NEW_ORDERA4
(
  NO_O_ID     INTEGER NOT NULL,
  NO_D_ID     SMALLINT NOT NULL,
  NO_W_ID     INTEGER NOT NULL
)
IN ts_newordA_004
INDEX IN ts_newordA_004
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 1561 ENDING AT 2080,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)

```

```

ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA5;
CREATE TABLE NEW_ORDERA5
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_005
INDEX IN ts_newordA_005
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 2081 ENDING AT 2600,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA6;
CREATE TABLE NEW_ORDERA6
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_006
INDEX IN ts_newordA_006
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 2601 ENDING AT 3120,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA7;
CREATE TABLE NEW_ORDERA7
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_007
INDEX IN ts_newordA_007
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 3121 ENDING AT 3640,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA8;
CREATE TABLE NEW_ORDERA8
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_008
INDEX IN ts_newordA_008
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 3641 ENDING AT 4160,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;

```

```

connect to TPCC in share mode;
DROP TABLE NEW_ORDERA9;
CREATE TABLE NEW_ORDERA9
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_009
INDEX IN ts_newordA_009
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 4161 ENDING AT 4680,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA10;
CREATE TABLE NEW_ORDERA10
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_010
INDEX IN ts_newordA_010
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 4681 ENDING AT 5200,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA11;
CREATE TABLE NEW_ORDERA11
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_011
INDEX IN ts_newordA_011
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 5201 ENDING AT 5720,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA12;
CREATE TABLE NEW_ORDERA12
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_012
INDEX IN ts_newordA_012
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 5721 ENDING AT 6240,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA13;

```

```

CREATE TABLE NEW_ORDERA13
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_013
INDEX IN ts_newordA_013
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 6241 ENDING AT 6760,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA14;
CREATE TABLE NEW_ORDERA14
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_014
INDEX IN ts_newordA_014
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 6761 ENDING AT 7280,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA15;
CREATE TABLE NEW_ORDERA15
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_015
INDEX IN ts_newordA_015
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 7281 ENDING AT 7800,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA16;
CREATE TABLE NEW_ORDERA16
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_016
INDEX IN ts_newordA_016
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 7801 ENDING AT 8320,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA17;
CREATE TABLE NEW_ORDERA17
(

```



```

connect to TPCC in share mode;
DROP TABLE NEW_ORDERA79;
CREATE TABLE NEW_ORDERA79
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_079
INDEX IN ts_newordA_079
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 40561 ENDING AT 41080,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERA80;
CREATE TABLE NEW_ORDERA80

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordA_080
INDEX IN ts_newordA_080
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 41081 ENDING AT 41600,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 1900 ENDING AT 3675
)
ALLOW OVERFLOW;

```

```
connect reset;
```

DDL/CRTB NEW ORDERB.ddl

```

connect to TPCC in share mode;
DROP TABLE NEW_ORDERB1;
CREATE TABLE NEW_ORDERB1

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_001
INDEX IN ts_newordB_001
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 1 ENDING AT 520,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB2;
CREATE TABLE NEW_ORDERB2

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_002
INDEX IN ts_newordB_002
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 521 ENDING AT 1040,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB3;
CREATE TABLE NEW_ORDERB3

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_003
INDEX IN ts_newordB_003
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 1041 ENDING AT 1560,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB4;
CREATE TABLE NEW_ORDERB4

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_004
INDEX IN ts_newordB_004
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 1561 ENDING AT 2080,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB5;
CREATE TABLE NEW_ORDERB5

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_005
INDEX IN ts_newordB_005
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 2081 ENDING AT 2600,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB6;
CREATE TABLE NEW_ORDERB6

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_006
INDEX IN ts_newordB_006
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 2601 ENDING AT 3120,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;

```

```

DROP TABLE NEW_ORDERB7;
CREATE TABLE NEW_ORDERB7

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_007
INDEX IN ts_newordB_007
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 3121 ENDING AT 3640,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB8;
CREATE TABLE NEW_ORDERB8

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_008
INDEX IN ts_newordB_008
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 3641 ENDING AT 4160,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB9;
CREATE TABLE NEW_ORDERB9

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_009
INDEX IN ts_newordB_009
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 4161 ENDING AT 4680,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB10;
CREATE TABLE NEW_ORDERB10

```

```

(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_010
INDEX IN ts_newordB_010
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 4681 ENDING AT 5200,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB11;
CREATE TABLE NEW_ORDERB11

```



```

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB73;
CREATE TABLE NEW_ORDERB73
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_073
INDEX IN ts_newordB_073
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 37441 ENDING AT 37960,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB74;
CREATE TABLE NEW_ORDERB74
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_074
INDEX IN ts_newordB_074
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 37961 ENDING AT 38480,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB75;
CREATE TABLE NEW_ORDERB75
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_075
INDEX IN ts_newordB_075
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 38481 ENDING AT 39000,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB76;
CREATE TABLE NEW_ORDERB76
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_076
INDEX IN ts_newordB_076
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 39001 ENDING AT 39520,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;

```

```

DROP TABLE NEW_ORDERB77;
CREATE TABLE NEW_ORDERB77
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_077
INDEX IN ts_newordB_077
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 39521 ENDING AT 40040,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB78;
CREATE TABLE NEW_ORDERB78
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_078
INDEX IN ts_newordB_078
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 40041 ENDING AT 40560,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB79;
CREATE TABLE NEW_ORDERB79
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_079
INDEX IN ts_newordB_079
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 40561 ENDING AT 41080,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE NEW_ORDERB80;
CREATE TABLE NEW_ORDERB80
(
  NO_O_ID    INTEGER    NOT NULL,
  NO_D_ID    SMALLINT   NOT NULL,
  NO_W_ID    INTEGER    NOT NULL
)
IN ts_newordB_080
INDEX IN ts_newordB_080
ORGANIZE BY KEY SEQUENCE (
  NO_W_ID STARTING FROM 41081 ENDING AT 41600,
  NO_D_ID STARTING FROM 1 ENDING AT 10,
  NO_O_ID STARTING FROM 3676 ENDING AT 5451
)
ALLOW OVERFLOW;

connect reset;

```

DDL/CRTB ORDERS.ddl

```

connect to TPCC in share mode;
DROP TABLE ORDERS1;
CREATE TABLE ORDERS1
(
  O_C_ID    INTEGER    NOT NULL,
  O_ENTRY_D  TIMESTAMP  NOT NULL,
  O_CARRIER_ID SMALLINT NOT NULL,
  O_OL_CNT   SMALLINT  NOT NULL,
  O_ALL_LOCAL SMALLINT  NOT NULL,
  O_ID       INTEGER    NOT NULL,
  O_W_ID     INTEGER    NOT NULL,
  O_D_ID     SMALLINT   NOT NULL
)
IN ts_order_001
INDEX IN is_order_001
ORGANIZE BY KEY SEQUENCE (
  O_ID STARTING FROM 1 ENDING AT 3675,
  O_W_ID STARTING FROM 1 ENDING AT 520,
  O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS2;
CREATE TABLE ORDERS2
(
  O_C_ID    INTEGER    NOT NULL,
  O_ENTRY_D  TIMESTAMP  NOT NULL,
  O_CARRIER_ID SMALLINT NOT NULL,
  O_OL_CNT   SMALLINT  NOT NULL,
  O_ALL_LOCAL SMALLINT  NOT NULL,
  O_ID       INTEGER    NOT NULL,
  O_W_ID     INTEGER    NOT NULL,
  O_D_ID     SMALLINT   NOT NULL
)
IN ts_order_002
INDEX IN is_order_002
ORGANIZE BY KEY SEQUENCE (
  O_ID STARTING FROM 1 ENDING AT 3675,
  O_W_ID STARTING FROM 521 ENDING AT 1040,
  O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS3;
CREATE TABLE ORDERS3
(
  O_C_ID    INTEGER    NOT NULL,
  O_ENTRY_D  TIMESTAMP  NOT NULL,
  O_CARRIER_ID SMALLINT NOT NULL,
  O_OL_CNT   SMALLINT  NOT NULL,
  O_ALL_LOCAL SMALLINT  NOT NULL,
  O_ID       INTEGER    NOT NULL,
  O_W_ID     INTEGER    NOT NULL,
  O_D_ID     SMALLINT   NOT NULL
)
IN ts_order_003
INDEX IN is_order_003
ORGANIZE BY KEY SEQUENCE (
  O_ID STARTING FROM 1 ENDING AT 3675,
  O_W_ID STARTING FROM 1041 ENDING AT 1560,
  O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS4;
CREATE TABLE ORDERS4
(

```



```

O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 6241 ENDING AT 6760,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS14;
CREATE TABLE ORDERS14
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_014
INDEX IN is_order_014
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 6761 ENDING AT 7280,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS15;
CREATE TABLE ORDERS15
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_015
INDEX IN is_order_015
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 7281 ENDING AT 7800,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS16;
CREATE TABLE ORDERS16
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_016
INDEX IN is_order_016
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 7801 ENDING AT 8320,
O_D_ID STARTING FROM 1 ENDING AT 10
)

```

```

ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS17;
CREATE TABLE ORDERS17
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_017
INDEX IN is_order_017
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 8321 ENDING AT 8840,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS18;
CREATE TABLE ORDERS18
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_018
INDEX IN is_order_018
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 8841 ENDING AT 9360,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS19;
CREATE TABLE ORDERS19
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_019
INDEX IN is_order_019
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 9361 ENDING AT 9880,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS20;

```

```

CREATE TABLE ORDERS20
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_020
INDEX IN is_order_020
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 9881 ENDING AT 10400,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS21;
CREATE TABLE ORDERS21
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_021
INDEX IN is_order_021
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 10401 ENDING AT 10920,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS22;
CREATE TABLE ORDERS22
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,
O_CARRIER_ID SMALLINT NOT NULL,
O_OL_CNT SMALLINT NOT NULL,
O_ALL_LOCAL SMALLINT NOT NULL,
O_ID INTEGER NOT NULL,
O_W_ID INTEGER NOT NULL,
O_D_ID SMALLINT NOT NULL
)
IN ts_order_022
INDEX IN is_order_022
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 10921 ENDING AT 11440,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDERS23;
CREATE TABLE ORDERS23
(
O_C_ID INTEGER NOT NULL,
O_ENTRY_D TIMESTAMP NOT NULL,

```



```

)
IN ts_order_080
INDEX IN ts_order_080
ORGANIZE BY KEY SEQUENCE (
O_ID STARTING FROM 1 ENDING AT 3675,
O_W_ID STARTING FROM 41081 ENDING AT 41600,
O_D_ID STARTING FROM 1 ENDING AT 10
)
ALLOW OVERFLOW;
connect reset;

```

DDL/CRTB ORDER_LINE.ddl

```

connect to TPCC in share mode;
DROP TABLE ORDER_LINE1;
CREATE TABLE ORDER_LINE1

```

```

(
OL_DELIVERY_D TIMESTAMP NOT NULL,
OL_AMOUNT DECIMAL(6,2) NOT NULL,
OL_I_ID INTEGER NOT NULL,
OL_SUPPLY_W_ID INTEGER NOT NULL,
OL_QUANTITY SMALLINT NOT NULL,
OL_DIST_INFO CHAR(24) NOT NULL,
OL_O_ID INTEGER NOT NULL,
OL_D_ID SMALLINT NOT NULL,
OL_W_ID INTEGER NOT NULL,
OL_NUMBER SMALLINT NOT NULL
)
IN ts_orderline_001
INDEX IN ts_orderline_001
ORGANIZE BY KEY SEQUENCE (
OL_W_ID STARTING FROM 1 ENDING AT 520,
OL_D_ID STARTING FROM 1 ENDING AT 10,
OL_O_ID STARTING FROM 1 ENDING AT 3675,
OL_NUMBER STARTING FROM 1 ENDING AT 15
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE2;
CREATE TABLE ORDER_LINE2

```

```

(
OL_DELIVERY_D TIMESTAMP NOT NULL,
OL_AMOUNT DECIMAL(6,2) NOT NULL,
OL_I_ID INTEGER NOT NULL,
OL_SUPPLY_W_ID INTEGER NOT NULL,
OL_QUANTITY SMALLINT NOT NULL,
OL_DIST_INFO CHAR(24) NOT NULL,
OL_O_ID INTEGER NOT NULL,
OL_D_ID SMALLINT NOT NULL,
OL_W_ID INTEGER NOT NULL,
OL_NUMBER SMALLINT NOT NULL
)
IN ts_orderline_002
INDEX IN ts_orderline_002
ORGANIZE BY KEY SEQUENCE (
OL_W_ID STARTING FROM 521 ENDING AT 1040,
OL_D_ID STARTING FROM 1 ENDING AT 10,
OL_O_ID STARTING FROM 1 ENDING AT 3675,
OL_NUMBER STARTING FROM 1 ENDING AT 15
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE3;
CREATE TABLE ORDER_LINE3

```

```

(
OL_DELIVERY_D TIMESTAMP NOT NULL,
OL_AMOUNT DECIMAL(6,2) NOT NULL,
OL_I_ID INTEGER NOT NULL,

```

```

OL_SUPPLY_W_ID INTEGER NOT NULL,
OL_QUANTITY SMALLINT NOT NULL,
OL_DIST_INFO CHAR(24) NOT NULL,
OL_O_ID INTEGER NOT NULL,
OL_D_ID SMALLINT NOT NULL,
OL_W_ID INTEGER NOT NULL,
OL_NUMBER SMALLINT NOT NULL
)
IN ts_orderline_003
INDEX IN ts_orderline_003
ORGANIZE BY KEY SEQUENCE (
OL_W_ID STARTING FROM 1041 ENDING AT 1560,
OL_D_ID STARTING FROM 1 ENDING AT 10,
OL_O_ID STARTING FROM 1 ENDING AT 3675,
OL_NUMBER STARTING FROM 1 ENDING AT 15
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE4;
CREATE TABLE ORDER_LINE4

```

```

(
OL_DELIVERY_D TIMESTAMP NOT NULL,
OL_AMOUNT DECIMAL(6,2) NOT NULL,
OL_I_ID INTEGER NOT NULL,
OL_SUPPLY_W_ID INTEGER NOT NULL,
OL_QUANTITY SMALLINT NOT NULL,
OL_DIST_INFO CHAR(24) NOT NULL,
OL_O_ID INTEGER NOT NULL,
OL_D_ID SMALLINT NOT NULL,
OL_W_ID INTEGER NOT NULL,
OL_NUMBER SMALLINT NOT NULL
)

```

```

IN ts_orderline_004
INDEX IN ts_orderline_004
ORGANIZE BY KEY SEQUENCE (
OL_W_ID STARTING FROM 1561 ENDING AT 2080,
OL_D_ID STARTING FROM 1 ENDING AT 10,
OL_O_ID STARTING FROM 1 ENDING AT 3675,
OL_NUMBER STARTING FROM 1 ENDING AT 15
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE5;
CREATE TABLE ORDER_LINE5

```

```

(
OL_DELIVERY_D TIMESTAMP NOT NULL,
OL_AMOUNT DECIMAL(6,2) NOT NULL,
OL_I_ID INTEGER NOT NULL,
OL_SUPPLY_W_ID INTEGER NOT NULL,
OL_QUANTITY SMALLINT NOT NULL,
OL_DIST_INFO CHAR(24) NOT NULL,
OL_O_ID INTEGER NOT NULL,
OL_D_ID SMALLINT NOT NULL,
OL_W_ID INTEGER NOT NULL,
OL_NUMBER SMALLINT NOT NULL
)

```

```

IN ts_orderline_005
INDEX IN ts_orderline_005
ORGANIZE BY KEY SEQUENCE (
OL_W_ID STARTING FROM 2081 ENDING AT 2600,
OL_D_ID STARTING FROM 1 ENDING AT 10,
OL_O_ID STARTING FROM 1 ENDING AT 3675,
OL_NUMBER STARTING FROM 1 ENDING AT 15
)

```

```

ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE6;

```

```

CREATE TABLE ORDER_LINE6

```

```

(
OL_DELIVERY_D TIMESTAMP NOT NULL,
OL_AMOUNT DECIMAL(6,2) NOT NULL,
OL_I_ID INTEGER NOT NULL,
OL_SUPPLY_W_ID INTEGER NOT NULL,
OL_QUANTITY SMALLINT NOT NULL,
OL_DIST_INFO CHAR(24) NOT NULL,
OL_O_ID INTEGER NOT NULL,
OL_D_ID SMALLINT NOT NULL,
OL_W_ID INTEGER NOT NULL,
OL_NUMBER SMALLINT NOT NULL
)

```

```

IN ts_orderline_006
INDEX IN ts_orderline_006
ORGANIZE BY KEY SEQUENCE (
OL_W_ID STARTING FROM 2601 ENDING AT 3120,
OL_D_ID STARTING FROM 1 ENDING AT 10,
OL_O_ID STARTING FROM 1 ENDING AT 3675,
OL_NUMBER STARTING FROM 1 ENDING AT 15
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE7;
CREATE TABLE ORDER_LINE7

```

```

(
OL_DELIVERY_D TIMESTAMP NOT NULL,
OL_AMOUNT DECIMAL(6,2) NOT NULL,
OL_I_ID INTEGER NOT NULL,
OL_SUPPLY_W_ID INTEGER NOT NULL,
OL_QUANTITY SMALLINT NOT NULL,
OL_DIST_INFO CHAR(24) NOT NULL,
OL_O_ID INTEGER NOT NULL,
OL_D_ID SMALLINT NOT NULL,
OL_W_ID INTEGER NOT NULL,
OL_NUMBER SMALLINT NOT NULL
)

```

```

IN ts_orderline_007
INDEX IN ts_orderline_007
ORGANIZE BY KEY SEQUENCE (
OL_W_ID STARTING FROM 3121 ENDING AT 3640,
OL_D_ID STARTING FROM 1 ENDING AT 10,
OL_O_ID STARTING FROM 1 ENDING AT 3675,
OL_NUMBER STARTING FROM 1 ENDING AT 15
)
ALLOW OVERFLOW;

```

```

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE8;
CREATE TABLE ORDER_LINE8

```

```

(
OL_DELIVERY_D TIMESTAMP NOT NULL,
OL_AMOUNT DECIMAL(6,2) NOT NULL,
OL_I_ID INTEGER NOT NULL,
OL_SUPPLY_W_ID INTEGER NOT NULL,
OL_QUANTITY SMALLINT NOT NULL,
OL_DIST_INFO CHAR(24) NOT NULL,
OL_O_ID INTEGER NOT NULL,
OL_D_ID SMALLINT NOT NULL,
OL_W_ID INTEGER NOT NULL,
OL_NUMBER SMALLINT NOT NULL
)

```

```

IN ts_orderline_008
INDEX IN ts_orderline_008
ORGANIZE BY KEY SEQUENCE (
OL_W_ID STARTING FROM 3641 ENDING AT 4160,
OL_D_ID STARTING FROM 1 ENDING AT 10,
OL_O_ID STARTING FROM 1 ENDING AT 3675,
OL_NUMBER STARTING FROM 1 ENDING AT 15
)

```



```

CREATE TABLE ORDER_LINE76
(
  OL_DELIVERY_D TIMESTAMP NOT NULL,
  OL_AMOUNT DECIMAL(6,2) NOT NULL,
  OL_I_ID INTEGER NOT NULL,
  OL_SUPPLY_W_ID INTEGER NOT NULL,
  OL_QUANTITY SMALLINT NOT NULL,
  OL_DIST_INFO CHAR(24) NOT NULL,
  OL_O_ID INTEGER NOT NULL,
  OL_D_ID SMALLINT NOT NULL,
  OL_W_ID INTEGER NOT NULL,
  OL_NUMBER SMALLINT NOT NULL
)
IN ts_orderline_076
INDEX IN ts_orderline_076
ORGANIZE BY KEY SEQUENCE (
  OL_W_ID STARTING FROM 39001 ENDING AT 39520,
  OL_D_ID STARTING FROM 1 ENDING AT 10,
  OL_O_ID STARTING FROM 1 ENDING AT 3675,
  OL_NUMBER STARTING FROM 1 ENDING AT 15
)
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE77;
CREATE TABLE ORDER_LINE77
(
  OL_DELIVERY_D TIMESTAMP NOT NULL,
  OL_AMOUNT DECIMAL(6,2) NOT NULL,
  OL_I_ID INTEGER NOT NULL,
  OL_SUPPLY_W_ID INTEGER NOT NULL,
  OL_QUANTITY SMALLINT NOT NULL,
  OL_DIST_INFO CHAR(24) NOT NULL,
  OL_O_ID INTEGER NOT NULL,
  OL_D_ID SMALLINT NOT NULL,
  OL_W_ID INTEGER NOT NULL,
  OL_NUMBER SMALLINT NOT NULL
)
IN ts_orderline_077
INDEX IN ts_orderline_077
ORGANIZE BY KEY SEQUENCE (
  OL_W_ID STARTING FROM 39521 ENDING AT 40040,
  OL_D_ID STARTING FROM 1 ENDING AT 10,
  OL_O_ID STARTING FROM 1 ENDING AT 3675,
  OL_NUMBER STARTING FROM 1 ENDING AT 15
)
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE78;
CREATE TABLE ORDER_LINE78
(
  OL_DELIVERY_D TIMESTAMP NOT NULL,
  OL_AMOUNT DECIMAL(6,2) NOT NULL,
  OL_I_ID INTEGER NOT NULL,
  OL_SUPPLY_W_ID INTEGER NOT NULL,
  OL_QUANTITY SMALLINT NOT NULL,
  OL_DIST_INFO CHAR(24) NOT NULL,
  OL_O_ID INTEGER NOT NULL,
  OL_D_ID SMALLINT NOT NULL,
  OL_W_ID INTEGER NOT NULL,
  OL_NUMBER SMALLINT NOT NULL
)
IN ts_orderline_078
INDEX IN ts_orderline_078
ORGANIZE BY KEY SEQUENCE (
  OL_W_ID STARTING FROM 40041 ENDING AT 40560,
  OL_D_ID STARTING FROM 1 ENDING AT 10,
  OL_O_ID STARTING FROM 1 ENDING AT 3675,
  OL_NUMBER STARTING FROM 1 ENDING AT 15
)
)

```

```

)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE79;
CREATE TABLE ORDER_LINE79
(
  OL_DELIVERY_D TIMESTAMP NOT NULL,
  OL_AMOUNT DECIMAL(6,2) NOT NULL,
  OL_I_ID INTEGER NOT NULL,
  OL_SUPPLY_W_ID INTEGER NOT NULL,
  OL_QUANTITY SMALLINT NOT NULL,
  OL_DIST_INFO CHAR(24) NOT NULL,
  OL_O_ID INTEGER NOT NULL,
  OL_D_ID SMALLINT NOT NULL,
  OL_W_ID INTEGER NOT NULL,
  OL_NUMBER SMALLINT NOT NULL
)
IN ts_orderline_079
INDEX IN ts_orderline_079
ORGANIZE BY KEY SEQUENCE (
  OL_W_ID STARTING FROM 40561 ENDING AT 41080,
  OL_D_ID STARTING FROM 1 ENDING AT 10,
  OL_O_ID STARTING FROM 1 ENDING AT 3675,
  OL_NUMBER STARTING FROM 1 ENDING AT 15
)
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE ORDER_LINE80;
CREATE TABLE ORDER_LINE80
(
  OL_DELIVERY_D TIMESTAMP NOT NULL,
  OL_AMOUNT DECIMAL(6,2) NOT NULL,
  OL_I_ID INTEGER NOT NULL,
  OL_SUPPLY_W_ID INTEGER NOT NULL,
  OL_QUANTITY SMALLINT NOT NULL,
  OL_DIST_INFO CHAR(24) NOT NULL,
  OL_O_ID INTEGER NOT NULL,
  OL_D_ID SMALLINT NOT NULL,
  OL_W_ID INTEGER NOT NULL,
  OL_NUMBER SMALLINT NOT NULL
)
IN ts_orderline_080
INDEX IN ts_orderline_080
ORGANIZE BY KEY SEQUENCE (
  OL_W_ID STARTING FROM 41081 ENDING AT 41600,
  OL_D_ID STARTING FROM 1 ENDING AT 10,
  OL_O_ID STARTING FROM 1 ENDING AT 3675,
  OL_NUMBER STARTING FROM 1 ENDING AT 15
)
)
ALLOW OVERFLOW;

connect reset;

DDL/CRTB_STOCK.ddl

connect to TPCC in share mode;
DROP TABLE STOCK1;
CREATE TABLE STOCK1
(
  S_REMOTE_CNT INTEGER NOT NULL,
  S_QUANTITY INTEGER NOT NULL,
  S_ORDER_CNT INTEGER NOT NULL,
  S_YTD INTEGER NOT NULL,
  S_DATA VARCHAR(50) NOT NULL,
  S_DIST_01 CHAR(24) NOT NULL,
  S_DIST_02 CHAR(24) NOT NULL,
  S_DIST_03 CHAR(24) NOT NULL,
  S_DIST_04 CHAR(24) NOT NULL,
  S_DIST_05 CHAR(24) NOT NULL,
  S_DIST_06 CHAR(24) NOT NULL,
  S_DIST_07 CHAR(24) NOT NULL,
  S_DIST_08 CHAR(24) NOT NULL,
  S_DIST_09 CHAR(24) NOT NULL,
  S_DIST_10 CHAR(24) NOT NULL,
  S_I_ID INTEGER NOT NULL,
  S_W_ID INTEGER NOT NULL
)

```

```

S_DIST_06 CHAR(24) NOT NULL,
S_DIST_07 CHAR(24) NOT NULL,
S_DIST_08 CHAR(24) NOT NULL,
S_DIST_09 CHAR(24) NOT NULL,
S_DIST_10 CHAR(24) NOT NULL,
S_I_ID INTEGER NOT NULL,
S_W_ID INTEGER NOT NULL
)
IN ts_stock_001
INDEX IN ts_stock_001
ORGANIZE BY KEY SEQUENCE (
  S_I_ID STARTING FROM 1 ENDING AT 100000,
  S_W_ID STARTING FROM 1 ENDING AT 520
)
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE STOCK2;
CREATE TABLE STOCK2
(
  S_REMOTE_CNT INTEGER NOT NULL,
  S_QUANTITY INTEGER NOT NULL,
  S_ORDER_CNT INTEGER NOT NULL,
  S_YTD INTEGER NOT NULL,
  S_DATA VARCHAR(50) NOT NULL,
  S_DIST_01 CHAR(24) NOT NULL,
  S_DIST_02 CHAR(24) NOT NULL,
  S_DIST_03 CHAR(24) NOT NULL,
  S_DIST_04 CHAR(24) NOT NULL,
  S_DIST_05 CHAR(24) NOT NULL,
  S_DIST_06 CHAR(24) NOT NULL,
  S_DIST_07 CHAR(24) NOT NULL,
  S_DIST_08 CHAR(24) NOT NULL,
  S_DIST_09 CHAR(24) NOT NULL,
  S_DIST_10 CHAR(24) NOT NULL,
  S_I_ID INTEGER NOT NULL,
  S_W_ID INTEGER NOT NULL
)
IN ts_stock_002
INDEX IN ts_stock_002
ORGANIZE BY KEY SEQUENCE (
  S_I_ID STARTING FROM 1 ENDING AT 100000,
  S_W_ID STARTING FROM 521 ENDING AT 1040
)
)
ALLOW OVERFLOW;

connect reset;
connect to TPCC in share mode;
DROP TABLE STOCK3;
CREATE TABLE STOCK3
(
  S_REMOTE_CNT INTEGER NOT NULL,
  S_QUANTITY INTEGER NOT NULL,
  S_ORDER_CNT INTEGER NOT NULL,
  S_YTD INTEGER NOT NULL,
  S_DATA VARCHAR(50) NOT NULL,
  S_DIST_01 CHAR(24) NOT NULL,
  S_DIST_02 CHAR(24) NOT NULL,
  S_DIST_03 CHAR(24) NOT NULL,
  S_DIST_04 CHAR(24) NOT NULL,
  S_DIST_05 CHAR(24) NOT NULL,
  S_DIST_06 CHAR(24) NOT NULL,
  S_DIST_07 CHAR(24) NOT NULL,
  S_DIST_08 CHAR(24) NOT NULL,
  S_DIST_09 CHAR(24) NOT NULL,
  S_DIST_10 CHAR(24) NOT NULL,
  S_I_ID INTEGER NOT NULL,
  S_W_ID INTEGER NOT NULL
)
IN ts_stock_003
INDEX IN ts_stock_003

```



```

ORGANIZE BY KEY SEQUENCE (
S_ID STARTING FROM 1 ENDING AT 10000,
S_W_ID STARTING FROM 41081 ENDING AT 41600
)
ALLOW OVERFLOW;
connect reset;

```

DDL/CRTB WAREHOUSE.ddl

```

connect to TPCC in share mode;
DROP TABLE WAREHOUSE1;
CREATE TABLE WAREHOUSE1
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_001
INDEX IN ts_wh_001
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 1 ENDING AT 520
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE2;
CREATE TABLE WAREHOUSE2
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_002
INDEX IN ts_wh_002
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 521 ENDING AT 1040
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE3;
CREATE TABLE WAREHOUSE3
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_003
INDEX IN ts_wh_003
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 1041 ENDING AT 1560
)

```

```

ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE4;
CREATE TABLE WAREHOUSE4
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_004
INDEX IN ts_wh_004
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 1561 ENDING AT 2080
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE5;
CREATE TABLE WAREHOUSE5
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_005
INDEX IN ts_wh_005
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 2081 ENDING AT 2600
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE6;
CREATE TABLE WAREHOUSE6
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_006
INDEX IN ts_wh_006
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 2601 ENDING AT 3120
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE7;
CREATE TABLE WAREHOUSE7
(
W_NAME CHAR(10) NOT NULL,

```

```

W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_007
INDEX IN ts_wh_007
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 3121 ENDING AT 3640
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE8;
CREATE TABLE WAREHOUSE8
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_008
INDEX IN ts_wh_008
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 3641 ENDING AT 4160
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE9;
CREATE TABLE WAREHOUSE9
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_009
INDEX IN ts_wh_009
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 4161 ENDING AT 4680
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE10;
CREATE TABLE WAREHOUSE10
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,

```

```

W_ID INTEGER NOT NULL
)
IN ts_wh_010
INDEX IN ts_wh_010
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 4681 ENDING AT 5200
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE11;
CREATE TABLE WAREHOUSE11
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_011
INDEX IN ts_wh_011
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 5201 ENDING AT 5720
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE12;
CREATE TABLE WAREHOUSE12
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_012
INDEX IN ts_wh_012
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 5721 ENDING AT 6240
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE13;
CREATE TABLE WAREHOUSE13
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_013
INDEX IN ts_wh_013
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 6241 ENDING AT 6760
)

```

```

ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE14;
CREATE TABLE WAREHOUSE14
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_014
INDEX IN ts_wh_014
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 6761 ENDING AT 7280
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE15;
CREATE TABLE WAREHOUSE15
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_015
INDEX IN ts_wh_015
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 7281 ENDING AT 7800
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE16;
CREATE TABLE WAREHOUSE16
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_016
INDEX IN ts_wh_016
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 7801 ENDING AT 8320
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE17;
CREATE TABLE WAREHOUSE17
(
W_NAME CHAR(10) NOT NULL,

```

```

W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_017
INDEX IN ts_wh_017
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 8321 ENDING AT 8840
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE18;
CREATE TABLE WAREHOUSE18
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_018
INDEX IN ts_wh_018
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 8841 ENDING AT 9360
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE19;
CREATE TABLE WAREHOUSE19
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_019
INDEX IN ts_wh_019
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 9361 ENDING AT 9880
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE20;
CREATE TABLE WAREHOUSE20
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,

```



```

W_ID INTEGER NOT NULL
)
IN ts_wh_070
INDEX IN ts_wh_070
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 35881 ENDING AT 36400
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE71;
CREATE TABLE WAREHOUSE71
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_071
INDEX IN ts_wh_071
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 36401 ENDING AT 36920
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE72;
CREATE TABLE WAREHOUSE72
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_072
INDEX IN ts_wh_072
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 36921 ENDING AT 37440
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE73;
CREATE TABLE WAREHOUSE73
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_073
INDEX IN ts_wh_073
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 37441 ENDING AT 37960
)

```

```

ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE74;
CREATE TABLE WAREHOUSE74
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_074
INDEX IN ts_wh_074
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 37961 ENDING AT 38480
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE75;
CREATE TABLE WAREHOUSE75
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_075
INDEX IN ts_wh_075
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 38481 ENDING AT 39000
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE76;
CREATE TABLE WAREHOUSE76
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_076
INDEX IN ts_wh_076
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 39001 ENDING AT 39520
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE77;
CREATE TABLE WAREHOUSE77
(
W_NAME CHAR(10) NOT NULL,

```

```

W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_077
INDEX IN ts_wh_077
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 39521 ENDING AT 40040
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE78;
CREATE TABLE WAREHOUSE78
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_078
INDEX IN ts_wh_078
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 40041 ENDING AT 40560
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE79;
CREATE TABLE WAREHOUSE79
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,
W_ID INTEGER NOT NULL
)
IN ts_wh_079
INDEX IN ts_wh_079
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 40561 ENDING AT 41080
)
ALLOW OVERFLOW;
connect reset;
connect to TPCC in share mode;
DROP TABLE WAREHOUSE80;
CREATE TABLE WAREHOUSE80
(
W_NAME CHAR(10) NOT NULL,
W_STREET_1 CHAR(20) NOT NULL,
W_STREET_2 CHAR(20) NOT NULL,
W_CITY CHAR(20) NOT NULL,
W_STATE CHAR(2) NOT NULL,
W_ZIP CHAR(9) NOT NULL,
W_TAX REAL NOT NULL,
W_YTD DECIMAL(12,2) NOT NULL,

```

```

W_ID INTEGER NOT NULL
)
IN ts_wh_080
INDEX IN ts_wh_080
ORGANIZE BY KEY SEQUENCE (
W_ID STARTING FROM 41081 ENDING AT 41600
)
ALLOW OVERFLOW;

```

connect reset;

DDL/CRVV CUSTOMER.ddl

```

connect to TPCG in share mode;
DROP VIEW CUSTOMER;
CREATE VIEW CUSTOMER

```

```

(C_ID,
C_STATE,
C_ZIP,
C_PHONE,
C_SINCE,
C_CREDIT_LIM,
C_MIDDLE,
C_CREDIT,
C_DISCOUNT,
C_DATA,
C_LAST,
C_FIRST,
C_STREET_1,
C_STREET_2,
C_CITY,
C_D_ID,
C_W_ID,
C_DELIVERY_CNT,
C_BALANCE,
C_YTD_PAYMENT,
C_PAYMENT_CNT
) AS SELECT * FROM CUSTOMER1 UNION ALL

```

```

SELECT * FROM CUSTOMER2 UNION ALL
SELECT * FROM CUSTOMER3 UNION ALL
SELECT * FROM CUSTOMER4 UNION ALL
SELECT * FROM CUSTOMER5 UNION ALL
SELECT * FROM CUSTOMER6 UNION ALL
SELECT * FROM CUSTOMER7 UNION ALL
SELECT * FROM CUSTOMER8 UNION ALL
SELECT * FROM CUSTOMER9 UNION ALL
SELECT * FROM CUSTOMER10 UNION ALL
SELECT * FROM CUSTOMER11 UNION ALL
SELECT * FROM CUSTOMER12 UNION ALL
SELECT * FROM CUSTOMER13 UNION ALL
SELECT * FROM CUSTOMER14 UNION ALL
SELECT * FROM CUSTOMER15 UNION ALL
SELECT * FROM CUSTOMER16 UNION ALL
SELECT * FROM CUSTOMER17 UNION ALL
SELECT * FROM CUSTOMER18 UNION ALL
SELECT * FROM CUSTOMER19 UNION ALL
SELECT * FROM CUSTOMER20 UNION ALL
SELECT * FROM CUSTOMER21 UNION ALL
SELECT * FROM CUSTOMER22 UNION ALL
SELECT * FROM CUSTOMER23 UNION ALL
SELECT * FROM CUSTOMER24 UNION ALL
SELECT * FROM CUSTOMER25 UNION ALL
SELECT * FROM CUSTOMER26 UNION ALL
SELECT * FROM CUSTOMER27 UNION ALL
SELECT * FROM CUSTOMER28 UNION ALL
SELECT * FROM CUSTOMER29 UNION ALL
SELECT * FROM CUSTOMER30 UNION ALL
SELECT * FROM CUSTOMER31 UNION ALL
SELECT * FROM CUSTOMER32 UNION ALL
SELECT * FROM CUSTOMER33 UNION ALL
SELECT * FROM CUSTOMER34 UNION ALL

```

```

SELECT * FROM CUSTOMER35 UNION ALL
SELECT * FROM CUSTOMER36 UNION ALL
SELECT * FROM CUSTOMER37 UNION ALL
SELECT * FROM CUSTOMER38 UNION ALL
SELECT * FROM CUSTOMER39 UNION ALL
SELECT * FROM CUSTOMER40 UNION ALL
SELECT * FROM CUSTOMER41 UNION ALL
SELECT * FROM CUSTOMER42 UNION ALL
SELECT * FROM CUSTOMER43 UNION ALL
SELECT * FROM CUSTOMER44 UNION ALL
SELECT * FROM CUSTOMER45 UNION ALL
SELECT * FROM CUSTOMER46 UNION ALL
SELECT * FROM CUSTOMER47 UNION ALL
SELECT * FROM CUSTOMER48 UNION ALL
SELECT * FROM CUSTOMER49 UNION ALL
SELECT * FROM CUSTOMER50 UNION ALL
SELECT * FROM CUSTOMER51 UNION ALL
SELECT * FROM CUSTOMER52 UNION ALL
SELECT * FROM CUSTOMER53 UNION ALL
SELECT * FROM CUSTOMER54 UNION ALL
SELECT * FROM CUSTOMER55 UNION ALL
SELECT * FROM CUSTOMER56 UNION ALL
SELECT * FROM CUSTOMER57 UNION ALL
SELECT * FROM CUSTOMER58 UNION ALL
SELECT * FROM CUSTOMER59 UNION ALL
SELECT * FROM CUSTOMER60 UNION ALL
SELECT * FROM CUSTOMER61 UNION ALL
SELECT * FROM CUSTOMER62 UNION ALL
SELECT * FROM CUSTOMER63 UNION ALL
SELECT * FROM CUSTOMER64 UNION ALL
SELECT * FROM CUSTOMER65 UNION ALL
SELECT * FROM CUSTOMER66 UNION ALL
SELECT * FROM CUSTOMER67 UNION ALL
SELECT * FROM CUSTOMER68 UNION ALL
SELECT * FROM CUSTOMER69 UNION ALL
SELECT * FROM CUSTOMER70 UNION ALL
SELECT * FROM CUSTOMER71 UNION ALL
SELECT * FROM CUSTOMER72 UNION ALL
SELECT * FROM CUSTOMER73 UNION ALL
SELECT * FROM CUSTOMER74 UNION ALL
SELECT * FROM CUSTOMER75 UNION ALL
SELECT * FROM CUSTOMER76 UNION ALL
SELECT * FROM CUSTOMER77 UNION ALL
SELECT * FROM CUSTOMER78 UNION ALL
SELECT * FROM CUSTOMER79 UNION ALL
SELECT * FROM CUSTOMER80
WITH ROW MOVEMENT;
COMMIT WORK;
connect reset;

```

DDL/CRVV DISTRICT.ddl

```

connect to TPCG in share mode;
DROP VIEW DISTRICT;
CREATE VIEW DISTRICT

```

```

(D_NEXT_O_ID,
D_TAX,
D_YTD,
D_NAME,
D_STREET_1,
D_STREET_2,
D_CITY,
D_STATE,
D_ZIP,
D_ID,
D_W_ID
) AS SELECT * FROM DISTRICT1 UNION ALL

```

```

SELECT * FROM DISTRICT2 UNION ALL
SELECT * FROM DISTRICT3 UNION ALL

```

```

SELECT * FROM DISTRICT4 UNION ALL
SELECT * FROM DISTRICT5 UNION ALL
SELECT * FROM DISTRICT6 UNION ALL
SELECT * FROM DISTRICT7 UNION ALL
SELECT * FROM DISTRICT8 UNION ALL
SELECT * FROM DISTRICT9 UNION ALL
SELECT * FROM DISTRICT10 UNION ALL
SELECT * FROM DISTRICT11 UNION ALL
SELECT * FROM DISTRICT12 UNION ALL
SELECT * FROM DISTRICT13 UNION ALL
SELECT * FROM DISTRICT14 UNION ALL
SELECT * FROM DISTRICT15 UNION ALL
SELECT * FROM DISTRICT16 UNION ALL
SELECT * FROM DISTRICT17 UNION ALL
SELECT * FROM DISTRICT18 UNION ALL
SELECT * FROM DISTRICT19 UNION ALL
SELECT * FROM DISTRICT20 UNION ALL
SELECT * FROM DISTRICT21 UNION ALL
SELECT * FROM DISTRICT22 UNION ALL
SELECT * FROM DISTRICT23 UNION ALL
SELECT * FROM DISTRICT24 UNION ALL
SELECT * FROM DISTRICT25 UNION ALL
SELECT * FROM DISTRICT26 UNION ALL
SELECT * FROM DISTRICT27 UNION ALL
SELECT * FROM DISTRICT28 UNION ALL
SELECT * FROM DISTRICT29 UNION ALL
SELECT * FROM DISTRICT30 UNION ALL
SELECT * FROM DISTRICT31 UNION ALL
SELECT * FROM DISTRICT32 UNION ALL
SELECT * FROM DISTRICT33 UNION ALL
SELECT * FROM DISTRICT34 UNION ALL
SELECT * FROM DISTRICT35 UNION ALL
SELECT * FROM DISTRICT36 UNION ALL
SELECT * FROM DISTRICT37 UNION ALL
SELECT * FROM DISTRICT38 UNION ALL
SELECT * FROM DISTRICT39 UNION ALL
SELECT * FROM DISTRICT40 UNION ALL
SELECT * FROM DISTRICT41 UNION ALL
SELECT * FROM DISTRICT42 UNION ALL
SELECT * FROM DISTRICT43 UNION ALL
SELECT * FROM DISTRICT44 UNION ALL
SELECT * FROM DISTRICT45 UNION ALL
SELECT * FROM DISTRICT46 UNION ALL
SELECT * FROM DISTRICT47 UNION ALL
SELECT * FROM DISTRICT48 UNION ALL
SELECT * FROM DISTRICT49 UNION ALL
SELECT * FROM DISTRICT50 UNION ALL
SELECT * FROM DISTRICT51 UNION ALL
SELECT * FROM DISTRICT52 UNION ALL
SELECT * FROM DISTRICT53 UNION ALL
SELECT * FROM DISTRICT54 UNION ALL
SELECT * FROM DISTRICT55 UNION ALL
SELECT * FROM DISTRICT56 UNION ALL
SELECT * FROM DISTRICT57 UNION ALL
SELECT * FROM DISTRICT58 UNION ALL
SELECT * FROM DISTRICT59 UNION ALL
SELECT * FROM DISTRICT60 UNION ALL
SELECT * FROM DISTRICT61 UNION ALL
SELECT * FROM DISTRICT62 UNION ALL
SELECT * FROM DISTRICT63 UNION ALL
SELECT * FROM DISTRICT64 UNION ALL
SELECT * FROM DISTRICT65 UNION ALL
SELECT * FROM DISTRICT66 UNION ALL
SELECT * FROM DISTRICT67 UNION ALL
SELECT * FROM DISTRICT68 UNION ALL
SELECT * FROM DISTRICT69 UNION ALL
SELECT * FROM DISTRICT70 UNION ALL
SELECT * FROM DISTRICT71 UNION ALL
SELECT * FROM DISTRICT72 UNION ALL
SELECT * FROM DISTRICT73 UNION ALL

```


db/create_database.ddl

```
drop database tpcc;
create database tpcc on /db_home collate using identity
catalog tablespace
managed by system using ('/db_home/db1catalog');
```

ts/create_tablespace.ddl

```
connect to tpcc;
```

```
drop tablespace ts_wh_001;
create regular tablespace ts_wh_001 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw1' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_002;
create regular tablespace ts_wh_002 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw2' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_003;
create regular tablespace ts_wh_003 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw3' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_004;
create regular tablespace ts_wh_004 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw4' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_005;
create regular tablespace ts_wh_005 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw5' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
```

```
drop tablespace ts_wh_006;
create regular tablespace ts_wh_006 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw6' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_007;
create regular tablespace ts_wh_007 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw7' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_008;
create regular tablespace ts_wh_008 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw8' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_009;
create regular tablespace ts_wh_009 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw9' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_010;
create regular tablespace ts_wh_010 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw10' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_011;
create regular tablespace ts_wh_011 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw11' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_012;
create regular tablespace ts_wh_012 pagesize 4K
managed by database
using
```

```
(
    device '/dev/raw/raw12' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_013;
create regular tablespace ts_wh_013 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw13' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_014;
create regular tablespace ts_wh_014 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw14' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_015;
create regular tablespace ts_wh_015 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw15' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_016;
create regular tablespace ts_wh_016 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw16' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_017;
create regular tablespace ts_wh_017 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw17' 224
)
extentsize 32
bufferpool IBMDEFAULTBP
prefetchsize 4096;
commit;
drop tablespace ts_wh_018;
create regular tablespace ts_wh_018 pagesize 4K
managed by database
using
(
    device '/dev/raw/raw18' 224
)
extentsize 32
```


bp/alter_bufferpool.ddl

connect to tpcc;

alter bufferpool IBMDEFAULTBP size 200;

alter bufferpool ITM size 2526;

alter bufferpool WDS1 size 1009;
alter bufferpool WDS2 size 1009;
alter bufferpool WDS3 size 1009;
alter bufferpool WDS4 size 1009;
alter bufferpool WDS5 size 1009;
alter bufferpool WDS6 size 1009;
alter bufferpool WDS7 size 1009;
alter bufferpool WDS8 size 1009;
alter bufferpool WDS9 size 1009;
alter bufferpool WDS10 size 1009;
alter bufferpool WDS11 size 1009;
alter bufferpool WDS12 size 1009;
alter bufferpool WDS13 size 1009;
alter bufferpool WDS14 size 1009;
alter bufferpool WDS15 size 1009;
alter bufferpool WDS16 size 1009;

alter bufferpool CST1 size 1008;
alter bufferpool CST2 size 1008;
alter bufferpool CST3 size 1008;
alter bufferpool CST4 size 1008;
alter bufferpool CST5 size 1008;
alter bufferpool CST6 size 1008;
alter bufferpool CST7 size 1008;
alter bufferpool CST8 size 1008;
alter bufferpool CST9 size 1008;
alter bufferpool CST10 size 1008;
alter bufferpool CST11 size 1008;
alter bufferpool CST12 size 1008;
alter bufferpool CST13 size 1008;
alter bufferpool CST14 size 1008;
alter bufferpool CST15 size 1008;
alter bufferpool CST16 size 1008;

alter bufferpool NEW1 size 50080;
alter bufferpool NEW2 size 50080;
alter bufferpool NEW3 size 50080;
alter bufferpool NEW4 size 50080;
alter bufferpool NEW5 size 50080;
alter bufferpool NEW6 size 50080;
alter bufferpool NEW7 size 50080;
alter bufferpool NEW8 size 50080;
alter bufferpool NEW9 size 50080;
alter bufferpool NEW10 size 50080;
alter bufferpool NEW11 size 50080;
alter bufferpool NEW12 size 50080;
alter bufferpool NEW13 size 50080;
alter bufferpool NEW14 size 50080;
alter bufferpool NEW15 size 50080;
alter bufferpool NEW16 size 50080;

alter bufferpool OLNORDIORD1 size 290000;
alter bufferpool OLNORDIORD2 size 290000;
alter bufferpool OLNORDIORD3 size 290000;
alter bufferpool OLNORDIORD4 size 290000;
alter bufferpool OLNORDIORD5 size 290000;
alter bufferpool OLNORDIORD6 size 290000;
alter bufferpool OLNORDIORD7 size 290000;
alter bufferpool OLNORDIORD8 size 290000;
alter bufferpool OLNORDIORD9 size 290000;

alter bufferpool OLNORDIORD10 size 290000;
alter bufferpool OLNORDIORD11 size 290000;
alter bufferpool OLNORDIORD12 size 290000;
alter bufferpool OLNORDIORD13 size 290000;
alter bufferpool OLNORDIORD14 size 290000;
alter bufferpool OLNORDIORD15 size 290000;
alter bufferpool OLNORDIORD16 size 290000;

alter bufferpool HST1 size 1004;
alter bufferpool HST2 size 1004;
alter bufferpool HST3 size 1004;
alter bufferpool HST4 size 1004;
alter bufferpool HST5 size 1004;
alter bufferpool HST6 size 1004;
alter bufferpool HST7 size 1004;
alter bufferpool HST8 size 1004;
alter bufferpool HST9 size 1004;
alter bufferpool HST10 size 1004;
alter bufferpool HST11 size 1004;
alter bufferpool HST12 size 1004;
alter bufferpool HST13 size 1004;
alter bufferpool HST14 size 1004;
alter bufferpool HST15 size 1004;
alter bufferpool HST16 size 1004;

alter bufferpool CSTI1 size 39600;
alter bufferpool CSTI2 size 39600;
alter bufferpool CSTI3 size 39600;
alter bufferpool CSTI4 size 39600;
alter bufferpool CSTI5 size 39600;
alter bufferpool CSTI6 size 39600;
alter bufferpool CSTI7 size 39600;
alter bufferpool CSTI8 size 39600;
alter bufferpool CSTI9 size 39600;
alter bufferpool CSTI10 size 39600;
alter bufferpool CSTI11 size 39600;
alter bufferpool CSTI12 size 39600;
alter bufferpool CSTI13 size 39600;
alter bufferpool CSTI14 size 39600;
alter bufferpool CSTI15 size 39600;
alter bufferpool CSTI16 size 39600;

alter bufferpool STK1 size 1124992;
alter bufferpool STK2 size 1124992;
alter bufferpool STK3 size 1124992;
alter bufferpool STK4 size 1124992;
alter bufferpool STK5 size 1124992;
alter bufferpool STK6 size 1124992;
alter bufferpool STK7 size 1124992;
alter bufferpool STK8 size 1124992;
alter bufferpool STK9 size 1124992;
alter bufferpool STK10 size 1124992;
alter bufferpool STK11 size 1124992;
alter bufferpool STK12 size 1124992;
alter bufferpool STK13 size 1124992;
alter bufferpool STK14 size 1124992;
alter bufferpool STK15 size 1124992;
alter bufferpool STK16 size 1124992;

connect reset;
terminate;

11.2. Data Generation

Makefile.config

```
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#####  
#  
# Makefile.config - Linux 64-bit  
#  
#  
  
# Make Configuration  
MAKE=make  
  
# Compiler Configuration.  
# CFLAGS_DEBUG may be set to "-g", "-DDEBUGIT" "-g -DDEBUGIT" or left blank  
CC=cc  
CFLAGS_OS=-DSQLUNIX -DSQLLinux -O2 -fpic -m64  
CFLAGS_OUT=-o  
CFLAGS_DEBUG=  
  
# Linker Configuration  
LD_EXEC=gcc  
LD_STORP=gcc  
LDFLAGS_EXEC=  
LDFLAGS_SHLIB=-shared  
LDFLAGS_STORP=$(LDFLAGS_SHLIB)  
LDFLAGS_LIB=-L$(TPCC_SQLLIB)/lib -ldb2 -m64  
LDFLAGS_OUT=-o  
  
# Library Configuration  
AR=ar  
ARFLAGS=-rv  
ARFLAGS_LIB=  
ARFLAGS_OUT=  
  
# OS Commands  
ERASE=rm -f  
ERASEDIR=$(ERASE) -R  
MOVE=mv  
COPY=cp  
  
# OS File Extensions & Path Separators  
OBJEXT=.o  
LIBEXT=.a  
SHLIBEXT=.so  
BINEXT=  
SLASH=/  
CMDSEP=;  
  
Src.Common/Makefile  
  
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###
```

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```

```
#####
```

```
#
# Makefile - Makefile for Src.Common
#
#
```

```
include $(TPCC_ROOT)/Makefile.config
```

```
#
#####
# Preprocessor, Compiler and Linker Flags
#
#####
```

```
BND_OPTS = GRANT PUBLIC \
  MESSAGES $*.bnd.msg
PRP_OPTS = BINDFILE \
  OPTLEVEL 1 \
  ISOLATION RR \
  MESSAGES $*.prep.msg \
  LEVEL $(TPCC_VERSION) \
  NOLINEMACRO
```

```
INCLUDE = -I$(TPCC_SQLLIB)/include -I$(TPCC_ROOT)/include
```

```
CFLAGS = $(CFLAGS_OS) $(CFLAGS_DEBUG) $(INCLUDE) \
  -DSQLA_NOLINES -D$(DB2EDITION) -D$(DB2VERSION) \
  -D$(TPCC_SPTYPE)
```

```
UTIL_OBJ_DBG = tpccdbg$(OBJEXT)
UTIL_OBJ_GEN = tpccmisc$(OBJEXT)
UTIL_OBJ_DB2 = tpccctx$(OBJEXT)
```

```
#
#####
# User Targets
#
#####
```

```
all: $(UTIL_OBJ_DBG) $(UTIL_OBJ_GEN) connect $(UTIL_OBJ_DB2) disconnect
```

```
dbgen: $(UTIL_OBJ_GEN)
```

```
clean:
  - $(ERASE) *$(OBJEXT) *.bnd *.msg tpccctx.c
```

```
#
#####
# Helper Targets
#
#####
```

```
connect:
  - db2 connect to $(TPCC_DBNAME)
```

```
disconnect:
  - db2 connect reset
  - db2 terminate
```

```
rebind: connect
  db2 bind tpccctx.bnd $(BND_OPTS)
```

```
#
#####
# Build Rules
#
#####
```

```
.SUFFIXES:
.SUFFIXES: $(OBJEXT) .c .sqc
```

```
.sqc.c:
  @echo "Prepping $*.sqc"
  -db2 prep $*.sqc $(PRP_OPTS)
  @echo "Binding $*.bnd"
  db2 bind $*.bnd $(BND_OPTS)
```

```
#
#####
# Dependencies
#
#####
```

```
# Source
tpccdbg$(OBJEXT): tpccdbg.c
tpccctx$(OBJEXT): tpccctx.c
tpccmisc$(OBJEXT): tpccmisc.c
```

```
# Headers
tpccdbg.c: $(TPCC_ROOT)/include/db2tpcc.h
```

```
UTIL_OBJ_DB2 = tpccctx$(OBJEXT)
```

```
#
#####
# User Targets
```

Src.Common/tpccmisc.c

```
/*
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**
**
**
*/
```

```
/*
 *
 * tpccmisc.c - Miscellaneous routines
 *
 */
```

```
#include <stdlib.h>
#include <sys/types.h>
#include <sys/time.h>
```

```
double current_time_ms(void);
double current_time(void);
```

```
/* Current time in SECONDS, precision SECONDS */
double current_time(void)
{
  /* use time() to get seconds */
  return(time(NULL));
}
```

```
/* Current time in SECONDS, precision MILLISECONDS */
double current_time_ms(void)
{
  /* gettimeofday() returns seconds and microseconds */
  /* convert to fractional seconds */
  struct timeval t;
  gettimeofday(&t,NULL);
  return (t.tv_sec + (double)t.tv_usec/(1000*1000));
}
```

dbgen/Makefile

```
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##
#####
```

```
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```

```
#####
```

```
# Makefile - Build gendata tool
#
```

```
include $(TPCC_ROOT)/Makefile.config
```

```
#
#####
# Preprocessor, Compiler and Linker Flags
#
#####
```

```
INCLUDE = -I$(TPCC_SQLLIB)/include -I$(TPCC_ROOT)/include
```

```
CFLAGS = $(INCLUDE) $(CFLAGS_OS) -DLINT_ARGS -DSQLA_NOLINES \
  -D$(DB2EDITION) -D$(DB2VERSION) $(CFLAGS_DEBUG)
```

```
LDFLAGS = $(LDFLAGS_EXEC) $(LDFLAGS_LIB)
```

```
#
#####
# File Collections
#
#####
```

```
OBJS = tpccrnd$(OBJEXT) \
  $(TPCC_ROOT)/Src.Common/tpccmisc$(OBJEXT)
OBJ_EEE = $(TPCC_ROOT)/Src.Common/tpccclwh$(OBJEXT)
```

```
EXEC = gendata$(BINEXT)
```

```
#
#####
# End-User Targets
#
#####
```

```
all: $(EXEC)
```

```
clean:
  - $(ERASE) *$(OBJEXT) $(EXEC)
```



```

{
// user-supplied delimiter used for rctload
InitFormatStrings(delim[0]);
using_rctload = 1;
} else {
fprintf(stderr,"gendata: Invalid delimiter specified: %s\n",delim);
exit(-1);
}

/* Validate File/Pipe Arguments */
if (option != 9 && outtype1 > 0 && outtype2 > 0)
{
fprintf(stderr,"gendata: Specifying two output file/pipes allowed only when
generating\norders/orderline.\n");
exit(-1);
}
if (option == 9 && ((outtype1 == 0) || (outtype2 == 0)))
{
fprintf(stderr,"gendata: Must specify two output file/pipes when generating
orders/orderline.\n");
exit(-1);
}
if (outtype1 == 0 || outname1 == NULL || strcmp(outname1,"") == 0)
{
fprintf(stderr,"gendata: Invalid 1st output file/pipe specified.\n");
exit(-1);
}
if (option == 9 && (outtype2 == 0 || outname2 == NULL || strcmp(outname2,"") == 0))
{
fprintf(stderr,"gendata: Invalid 2nd output file/pipe specified.\n");
exit(-1);
}
/* Ensure O/OL flat files are opened in append mode. This is required */
/* because we generate O/OL concurrently. See comments in genload.pl */
/* for further details on why this is necessary. */
if (option == 9)
{
if (outtype1 == IOH_FILE) outtype1 = IOH_FILE_APPEND;
if (outtype2 == IOH_FILE) outtype2 = IOH_FILE_APPEND;
}

/* Validate Range Arguments */
if (ware_start <= 0 || ware_start > WAREHOUSES) {
fprintf(stderr,"gendata: Invalid range starting value: %d\n",ware_start);
exit(-1);
}
if (ware_end <= 0 || ware_end > WAREHOUSES || ware_end < ware_start) {
fprintf(stderr,"gendata: Invalid range ending value: %d\n",ware_end);
exit(-1);
}

initialize_random();

/* ***** */
/* Generate Data */
/* ***** */
switch (option) {
case 3: /* WAREHOUSE */
gen_ware_tbl();
break;
case 4: /* DISTRICT */
gen_dist_tbl();
break;
case 5: /* ITEM */
gen_item_tbl();
break;
case 6: /* STOCK */
gen_stock_tbl();
break;
case 7: /* CUSTOMER */

```

```

gen_cust_tbl();
break;
case 8: /* HISTORY */
gen_hist_tbl();
break;
case 9: /* ORDERS + ORDER_LINE */
gen_ordr_tbl();
break;
case 11: /* NEW_ORDER */
gen_nu_ord_tbl();
break;
case 2:
case 10:
default:
fprintf(stderr, "Error: invalid option = %d \n", (option));
break;
}
return 0;
}

/*-----*/
/* generate item table */
/*-----*/

void gen_item_tbl( void )
{
sqlint32 item_num = 0 ;
sqlint32 item_im_id ;
char item_name[25] ;
double item_price ;
char item_data[51] ;

IOH_NUM numBytes;
ioHandle hnd;
char Buffer[1024];

timestamp = current_time();

rc = GenericOpen(&hnd, outtype1, outname1);
if (rc != 0) { goto item_done; }

for(item_num = 1; item_num <= ITEMS; item_num++)
{
/* create image id field */
item_im_id = rand_integer( 1, 10000 ) ;
/* create name field */
create_random_a_string( item_name, 14, 24);
/* create price field */
item_price = rand_decimal( 100, 10000, 2 ) ;
/* create ORIGINAL field */
create_a_string_with_original( item_data, 26, 50, 10) ;

numBytes = sprintf(Buffer, fmtItem,
item_name,
item_price,
item_data,
item_im_id,
item_num);

rc = GenericWrite(&hnd, Buffer, numBytes);
if (rc != 0) { goto item_done; }

} /* end for... */

rc = GenericClose(&hnd);

item_done:

timestamp2 = current_time();
elapsed = timestamp2 - timestamp1;

```

```

if (rc == 0) {
if (!quiet_mode) {
fprintf(stdout,"nITEM table generated in %8.2f seconds.\n\n",elapsed);
fflush(stdout);
}
} else {
fprintf(stderr,"nITEM table FAILED at (1 %d) after %8.2f
seconds.\n\n",item_num,elapsed);
fflush(stderr);
}
}

/*-----*/
/* generate stock table */
/*-----*/

void gen_stock_tbl( void )
{
sqlint32 ware_num = 0 ;
sqlint32 stock_num = 0 ;
sqlint32 stock_quant;
sqlint32 s_ytd;
sqlint32 s_order_cnt, s_remote_cnt;
char stock_dist_01[25];
char stock_dist_02[25];
char stock_dist_03[25];
char stock_dist_04[25];
char stock_dist_05[25];
char stock_dist_06[25];
char stock_dist_07[25];
char stock_dist_08[25];
char stock_dist_09[25];
char stock_dist_10[25];
char stock_data[51];

IOH_NUM numBytes;
ioHandle hnd;
char Buffer[1024];

timestamp1 = current_time();

rc = GenericOpen(&hnd, outtype1, outname1);
if (rc != 0) { goto stock_done; }

for (stock_num = 1; stock_num <= STOCK_PER_WAREHOUSE; stock_num++)
{
if (!quiet_mode && (stock_num%500 == 0))
{
fprintf(stdout, "STOCK for Item #%d\n",stock_num);
fflush(stdout);
}
for (ware_num = ware_start; ware_num <= ware_end; ware_num++)
{
stock_quant = rand_integer( 10, 100 ) ;
create_random_a_string( stock_dist_01, 24, 24);
create_random_a_string( stock_dist_02, 24, 24);
create_random_a_string( stock_dist_03, 24, 24);
create_random_a_string( stock_dist_04, 24, 24);
create_random_a_string( stock_dist_05, 24, 24);
create_random_a_string( stock_dist_06, 24, 24);
create_random_a_string( stock_dist_07, 24, 24);
create_random_a_string( stock_dist_08, 24, 24);
create_random_a_string( stock_dist_09, 24, 24);
create_random_a_string( stock_dist_10, 24, 24);

/* create ORIGINAL field */
create_a_string_with_original( stock_data, 26, 50, 10) ;
s_ytd = s_order_cnt = s_remote_cnt = 0;

numBytes = sprintf(Buffer, fmtStock,
s_remote_cnt,

```

```

stock_quant,
s_order_cnt,
s_ytd,
stock_data,
stock_dist_01,
stock_dist_02,
stock_dist_03,
stock_dist_04,
stock_dist_05,
stock_dist_06,
stock_dist_07,
stock_dist_08,
stock_dist_09,
stock_dist_10,
stock_num,
ware_num);

rc = GenericWrite(&hnd, Buffer, numBytes);
if (rc != 0) { goto stock_done; }

} /* end for... */
} /* end for... */

rc = GenericClose(&hnd);

stock_done:

timestamp2 = current_time();
elapsed = timestamp2 - timestamp1;
if (rc == 0) {
    if (!quiet_mode) {
        fprintf(stdout, "\nSTOCK table generated in %8.2f seconds.\n\n", elapsed);
        fflush(stdout);
    }
} else {
    fprintf(stderr, "\nSTOCK table FAILED at (S %d W %d) after %8.2f
seconds.\n\n", stock_num, ware_num, elapsed);
    fflush(stderr);
}
}

/*-----*/
/* generate warehouse table
/*-----*/
void gen_ware_tbl( void )
{
    sqlint32 ware_num = 0 ;
    char ware_name[11] ;
    char ware_street_1[21] ;
    char ware_street_2[21] ;
    char ware_city[21] ;
    char ware_state[3] ;
    char ware_zip[10] ;
    double ware_tax ;
    double ware_YTD ;

    IOH_NUM numBytes;
    ioHandle hnd;
    char Buffer[1024];

    timestamp1 = current_time();

    rc = GenericOpen(&hnd, outtype1, outname1);
    if (rc != 0) { goto ware_done; }

    for (ware_num = ware_start; ware_num <= ware_end; ware_num++)
    {
        if (!quiet_mode && ((ware_num % 500) == 0)) {
            fprintf(stdout, "Warehouse #%d\n", ware_num);
            fflush(stdout);

```

```

}

create_random_a_string( ware_name, 6, 10); /* create name */
create_random_a_string( ware_street_1, 10, 20); /* create street 1 */
create_random_a_string( ware_street_2, 10, 20); /* create street 2 */
create_random_a_string( ware_city, 10, 20); /* create city */
create_random_a_string( ware_state, 2, 2); /* create state */
create_random_n_string( ware_zip, 4, 4); /* create zip */
strcat(ware_zip, "11111");

ware_tax = rand_decimal(0, 2000, 4);
ware_YTD = 300000.00;

numBytes = sprintf(Buffer, fmtWare,
    ware_name,
    ware_street_1,
    ware_street_2,
    ware_city,
    ware_state,
    ware_zip,
    ware_tax,
    ware_YTD,
    ware_num);

rc = GenericWrite(&hnd, Buffer, numBytes);
if (rc != 0) { goto ware_done; }

} /* end for */

rc = GenericClose(&hnd);

ware_done:

timestamp2 = current_time();
elapsed = timestamp2 - timestamp1;
if (rc == 0) {
    if (!quiet_mode) {
        fprintf(stdout, "\nWAREHOUSE table generated in %8.2f seconds.\n\n", elapsed);
        fflush(stdout);
    }
} else {
    fprintf(stderr, "\nWAREHOUSE table FAILED at (W %d) after %8.2f
seconds.\n\n", ware_num, elapsed);
    fflush(stderr);
}
}

/*-----*/
/* generate dist table
/*-----*/
void gen_dist_tbl( void )
{
    sqlint32 ware_num = 0 ;
    sqlint32 dist_num = 0 ;
    char dist_name[11];
    char dist_street_1[21];
    char dist_street_2[21];
    char dist_city[21];
    char dist_state[3];
    char dist_zip[10];
    double dist_tax;
    sqlint32 next_o_id;
    double dist_YTD;

    IOH_NUM numBytes;
    ioHandle hnd;
    char Buffer[1024];

    next_o_id = CUSTOMERS_PER_DISTRICT + 1;
    timestamp1 = current_time();

```

```

rc = GenericOpen(&hnd, outtype1, outname1);
if (rc != 0) { goto dist_done; }

for (ware_num = ware_start; ware_num <= ware_end; ware_num++)
{
    if (!quiet_mode) {
        fprintf(stdout, "DISTRICT for Warehouse #%d\n", ware_num);
        fflush(stdout);
    }
}
for (dist_num = 1; dist_num <= DISTRICTS_PER_WAREHOUSE; dist_num++)
{
    create_random_a_string( dist_name, 6, 10); /* create name */
    create_random_a_string( dist_street_1, 10, 20); /* create street 1 */
    create_random_a_string( dist_street_2, 10, 20); /* create street 2 */
    create_random_a_string( dist_city, 10, 20); /* create city */
    create_random_a_string( dist_state, 2, 2); /* create state */
    create_random_n_string( dist_zip, 4, 4); /* create zip */
    strcat(dist_zip, "11111");
    dist_tax = rand_decimal(0, 2000, 4);
    dist_YTD = 300000.00;

    numBytes = sprintf(Buffer, fmtDist,
        next_o_id,
        dist_tax,
        dist_YTD,
        dist_name,
        dist_street_1,
        dist_street_2,
        dist_city,
        dist_state,
        dist_zip,
        dist_num,
        ware_num);

    rc = GenericWrite(&hnd, Buffer, numBytes);
    if (rc != 0) { goto dist_done; }

} /* end for... */
} /* end for... */

rc = GenericClose(&hnd);

dist_done:

timestamp2 = current_time();
elapsed = timestamp2 - timestamp1;
if (rc == 0) {
    if (!quiet_mode) {
        fprintf(stdout, "\nDISTRICT table generated in %8.2f seconds.\n\n", elapsed);
        fflush(stdout);
    }
} else {
    fprintf(stderr, "\nDISTRICT table FAILED at (W %d D %d) after %8.2f
seconds.\n\n", ware_num, dist_num, elapsed);
    fflush(stderr);
}
}

/*-----*/
/* generate customer table
/*-----*/
void gen_cust_tbl( void )
{
    sqlint32 ware_num = 0 ;
    sqlint32 dist_num = 0 ;
    sqlint32 cust_num = 0 ;
    char cust_last[17];
    char cust_middle[3];
    char cust_first[17];

```



```

char cust_street_1[21];
char cust_street_2[21];
char cust_city[21];
char cust_state[3];
char cust_zip[10];
char cust_phone[17];
char cust_credit[3];
char cust_data[501];
char cust_since[27];
double cust_discount;
double cust_balance;
double cust_YTD_payment;
double cust_credit_lim;

IOH_NUM numBytes;
ioHandle hnd;
char Buffer[1024];
int len, pos;

timestamp1 = current_time();

rc = GenericOpen(&hnd, outtype1, outname1);
if (rc != 0) { goto cust_done; }

strcpy(cust_middle, "OE");

createTimestampString(cust_since);

for (cust_num = 1; cust_num <= CUSTOMERS_PER_DISTRICT; cust_num++)
{
    if (!quiet_mode) {
        fprintf(stdout, "CUSTOMER #%d:\n", cust_num);
        fflush(stdout);
    }

    for (ware_num = ware_start; ware_num <= ware_end; ware_num++)
    {
        for (dist_num = 1; dist_num <= DISTRICTS_PER_WAREHOUSE; dist_num++)
        {
            if (cust_num <= 1000) /* create last name */
                create_random_last_name(cust_last, cust_num);
            else /* create last name */
                create_random_last_name(cust_last, 0);
            create_random_a_string(cust_first, 8, 16); /* create first name */
            create_random_a_string(cust_street_1, 10, 20); /* create street 1 */
            create_random_a_string(cust_street_2, 10, 20); /* create street 2 */
            create_random_a_string(cust_city, 10, 20); /* create city */
            create_random_a_string(cust_state, 2, 2); /* create state */
            create_random_n_string(cust_zip, 4, 4); /* create zip */
            strcat(cust_zip, "11111");

            /* create phone number */
            create_random_n_string(cust_phone, 16, 16);
            if (rand_integer(1, 100) <= 10)
                strcpy(cust_credit, "BC");
            else
                strcpy(cust_credit, "GC");

            /* create discount rate */
            cust_discount = rand_decimal(0, 5000, 4);

            /* create customer data */
            create_random_a_string(cust_data, 300, 500);

            /* pad customer data (only for non-rctload) */
            if (using_rctload == 0) {
                for (pos=strlen(cust_data); pos<500; pos++)
                    cust_data[pos] = ' ';
                cust_data[500] = '\0';
            }
        }
    }
}

```

```

cust_credit_lim = 50000.00;
cust_balance = -10.00;
cust_YTD_payment = 10.00;

if (cust_num == 1 && dist_num == 1 && ware_num == 1)
{
    sprintf(cust_first, "C_LAST_LOAD=%d", C_C_LAST_LOAD);
}

numBytes = sprintf(Buffer, fmtCust,
    cust_num,
    cust_state,
    cust_zip,
    cust_phone,
    cust_since,
    cust_credit_lim,
    cust_middle,
    cust_credit,
    cust_discount,
    cust_data,
    cust_last,
    cust_first,
    cust_street_1,
    cust_street_2,
    cust_city,
    dist_num,
    ware_num,
    0,
    cust_balance,
    cust_YTD_payment,
    1);

rc = GenericWrite(&hnd, Buffer, numBytes);
if (rc != 0) { goto cust_done; }

} /* end for district... */
} /* end for warehouse... */
} /* end for customer... */

rc = GenericClose(&hnd);

cust_done:

timestamp2 = current_time();
elapsed = timestamp2 - timestamp1;
if (rc == 0) {
    if (!quiet_mode) {
        fprintf(stdout, "\nCUSTOMER table generated in %8.2f seconds.\n\n", elapsed);
        fflush(stdout);
    }
} else {
    fprintf(stderr, "\nCUSTOMER table FAILED at (W %d D %d C %d) after %8.2f
seconds.\n\n", ware_num, dist_num, cust_num, elapsed);
    fflush(stderr);
}

}

/*-----*/
/* generate hist table */
/*-----*/

void gen_hist_tbl( void )
{
    sqlint32 ware_num = 0 ;
    sqlint32 dist_num = 0 ;
    sqlint32 cust_num = 0 ;
    char hist_data[25] ;
    char h_date[27] ;

IOH_NUM numBytes;

```

```

ioHandle hnd;
char Buffer[1024];

timestamp1 = current_time();

rc = GenericOpen(&hnd, outtype1, outname1);
if (rc != 0) { goto hist_done; }

createTimestampString(h_date);

for (ware_num = ware_start; ware_num <= ware_end; ware_num++)
{
    if (!quiet_mode) {
        fprintf(stdout, "HISTORY for Warehouse #%d:\n", ware_num);
        fflush(stdout);
    }
    for (dist_num = 1; dist_num <= DISTRICTS_PER_WAREHOUSE; dist_num++)
    {
        for (cust_num = 1; cust_num <= CUSTOMERS_PER_DISTRICT; cust_num++)
        {
            /* create history data */
            create_random_a_string(hist_data, 12, 24);

            numBytes = sprintf(Buffer, fmtHist,
                cust_num,
                dist_num,
                ware_num,
                dist_num,
                ware_num,
                h_date,
                10.00,
                hist_data);

            rc = GenericWrite(&hnd, Buffer, numBytes);
            if (rc != 0) { goto hist_done; }

        } /* end for customer... */
    } /* end for district... */
} /* end for warehouse... */

rc = GenericClose(&hnd);

hist_done:

timestamp2 = current_time();
elapsed = timestamp2 - timestamp1;
if (rc == 0) {
    if (!quiet_mode) {
        fprintf(stdout, "\nHISTORY table generated in %8.2f seconds.\n\n", elapsed);
        fflush(stdout);
    }
} else {
    fprintf(stderr, "\nHISTORY table FAILED at (W %d D %d C %d) after %8.2f
seconds.\n\n", ware_num, dist_num, cust_num, elapsed);
    fflush(stderr);
}

}

}

/*-----*/
/* generate nu_ord table */
/*-----*/

void gen_nu_ord_tbl( void )
{
    sqlint32 ware_num = 0 ;
    sqlint32 dist_num = 0 ;
    sqlint32 nu_ord_id = 0 ;
    int nu_ord_hi ;

IOH_NUM numBytes;
ioHandle hnd;

```

```

char Buffer[1024];

/* compute maximum and minimum
order numbers for this
district */
nu_ord_hi = CUSTOMERS_PER_DISTRICT - NU_ORDERS_PER_DISTRICT + 1;
if (nu_ord_hi < 0) {
    nu_ord_hi = CUSTOMERS_PER_DISTRICT - (CUSTOMERS_PER_DISTRICT / 3) + 1;
    fprintf(stderr, "\n**** WARNING **** NU_ORDERS_PER_DISTRICT is >
CUSTOMERS_PER_DISTRICT\n");
    fprintf(stderr, "    Check the values in file lval.h\n");
    fprintf(stderr, "    Loading New-Order with 1/3 of
CUSTOMERS_PER_DISTRICT\n");
}

timestamp1 = current_time();

rc = GenericOpen(&hnd, outtype1, outname1);
if (rc != 0) { goto neword_done; }

/* We generate in O/W/D order for non-RCT tables. With the
* data clustered on O_ID, this gives us good bufferpool
* characteristics. We also create a btree index in W/D/O
* order, to satisfy MIN(O_ID) queries.
*
* For RCT tables *with* RCT Jump Cache, we *should* generate
* the data in W/D/O order (to match the table definition.)
* We don't since it would push schema decisions into flat file
* generation (and I don't want to do that.) It's just as easy
* to sort the flat files afterwards.
*/

for (nu_ord_id = nu_ord_hi;
    nu_ord_id <= CUSTOMERS_PER_DISTRICT;
    nu_ord_id++)
{
    if (!quiet_mode) {
        fprintf(stdout, "NEW_ORDER for Customer #%d:\n", nu_ord_id);
        fflush(stdout);
    }
    for (ware_num = ware_start; ware_num <= ware_end; ware_num++)
    {
        for (dist_num = 1; dist_num <= DISTRICTS_PER_WAREHOUSE; dist_num++)
        {
            numBytes = sprintf(Buffer, fmtNewOrd,
                nu_ord_id,
                dist_num,
                ware_num);

            rc = GenericWrite(&hnd, Buffer, numBytes);
            if (rc != 0) { goto neword_done; }

        } /* end for... */
    } /* end for... */
} /* end for... */

rc = GenericClose(&hnd);

neword_done:

timestamp2 = current_time();
elapsed = timestamp2 - timestamp1;
if (rc == 0) {
    if (!quiet_mode) {
        fprintf(stdout, "\nNEW_ORDER table generated in %8.2f seconds.\n\n", elapsed);
        fflush(stdout);
    }
} else {
    fprintf(stderr, "\nNEW_ORDER table FAILED at (W %d D %d O %d) after %8.2f
seconds.\n\n", ware_num, dist_num, nu_ord_id, elapsed);
}

```

```

        fflush(stderr);
    }
}

/*-----*/
/* generate order and order_line tables */
/*-----*/
void gen_ordr_tbl( void )
{
    sqlint32 ware_num = 0 ;
    sqlint32 dist_num = 0 ;
    sqlint32 cust_num = 0 ;
    sqlint32 ord_num = 0 ;
    sqlint32 ordr_carrier_id;
    sqlint32 ordr_ol_cnt;
    sqlint32 oline_ol_num;
    sqlint32 oline_item_num;

    double oline_amount;
    char oline_dist_info[25];

    IOH_NUM numBytes;
    ioHandle hnd1, hnd2;
    char Buffer[1024];

    char currtmstp[27];
    char nulltmstp[27] = "0001-01-01 00:00:00";

    oline_dist_info[24] = '\0';

    timestamp1 = current_time();

    rc1 = GenericOpen(&hnd1, outtype1, outname1);
    if (rc1 != 0) { goto ool_done; }
    rc2 = GenericOpen(&hnd2, outtype2, outname2);
    if (rc2 != 0) { goto ool_done; }

    createTimeStampString(currtmstp);

    for (ware_num = ware_start; ware_num <= ware_end; ware_num++)
    {
        if (!quiet_mode) {
            fprintf(stdout, "ORDERS & ORDER_LINE for Warehouse #%d\n", ware_num);
            fflush(stdout);
        }
        for (dist_num = 1; dist_num <= DISTRICTS_PER_WAREHOUSE; dist_num++)
        {
            if (!quiet_mode) {
                fprintf(stdout, "District #%d\t", dist_num);
                fflush(stdout);
            }

            seed_1_3000();

            for (ord_num = 1; ord_num <= CUSTOMERS_PER_DISTRICT; ord_num++)
            {
                if (ord_num < 2101)
                    ordr_carrier_id = rand_integer( 1, 10 );
                else
                    ordr_carrier_id = 0;

                cust_num = random_1_3000();
                ordr_ol_cnt = rand_integer(MIN_OL_PER_ORDER, MAX_OL_PER_ORDER);

                numBytes = sprintf(Buffer, fmtOrdr,
                    cust_num,
                    currtmstp,
                    ordr_carrier_id,
                    ordr_ol_cnt,
                    1,

```

```

                    ord_num,
                    ware_num,
                    dist_num);

                rc1 = GenericWrite(&hnd1, Buffer, numBytes);
                if (rc1 != 0) { goto ool_done; }

                for ( oline_ol_num = 1; oline_ol_num <= ordr_ol_cnt; oline_ol_num++ )
                {
                    oline_item_num = rand_integer(1, ITEMS);
                    create_random_a_string( oline_dist_info, 24, 24 );

                    numBytes = sprintf(Buffer, fmtOLine,
                        ((ord_num < 2101) ? currtmstp : nulltmstp),
                        ((ord_num < 2101) ? 0.00 : rand_decimal(1,999999,2)),
                        oline_item_num,
                        ware_num,
                        5,
                        oline_dist_info,
                        ord_num,
                        dist_num,
                        ware_num,
                        oline_ol_num);

                    rc2 = GenericWrite(&hnd2, Buffer, numBytes);
                    if (rc2 != 0) { goto ool_done; }

                } /* for order_line */
            } /* for order */
        } /* for dist */
    } /* for ware */

    rc1 = GenericClose(&hnd2);
    rc2 = GenericClose(&hnd1);

ool_done:

    timestamp2 = current_time();
    elapsed = timestamp2 - timestamp1;
    if (rc1 == 0 && rc2 == 0) {
        if (!quiet_mode) {
            fprintf(stdout, "\nORDERS & ORDER_LINE tables generated in %8.2f
seconds.\n\n", elapsed);
            fflush(stdout);
        }
    } else {
        fprintf(stderr, "\nORDERS & ORDER_LINE tables FAILED at (W %d D %d O %d OL %d)
after %8.2f seconds.\n\n", ware_num, dist_num, ord_num, oline_ol_num, elapsed);
        fflush(stderr);
    }
}

// This routine will initialize the printf format strings and replace the
// delimiter with the one provided. The pipe symbol is the default.
void InitFormatStrings(char delim)
{
    char *p;

    // Check if Using Default Delimiter
    if (delim == '|') return;

    // Replace Delimiters
    while (p = strchr(fmtWare, '|')) { *p = delim; }
    while (p = strchr(fmtDist, '|')) { *p = delim; }
    while (p = strchr(fmtItem, '|')) { *p = delim; }
    while (p = strchr(fmtStock, '|')) { *p = delim; }
    while (p = strchr(fmtCust, '|')) { *p = delim; }
    while (p = strchr(fmtHist, '|')) { *p = delim; }
    while (p = strchr(fmtOrdr, '|')) { *p = delim; }
    while (p = strchr(fmtOLine, '|')) { *p = delim; }
}

```

```

while (p = strchr(fmtNewOrd, ' ')) { *p = delim;
}

void ScalingReport(void)
{
    /* Print Scaling Values */
    fprintf(stdout, "Scaling Values in Use\n");
    fprintf(stdout, "-----\n");
    fprintf(stdout, "Warehouses:      %d\n", WAREHOUSES);
    fprintf(stdout, "Districts/Warehouse: %d\n", DISTRICTS_PER_WAREHOUSE);
    fprintf(stdout, "Customers/District:  %d\n", CUSTOMERS_PER_DISTRICT);
    fprintf(stdout, "Items:                %d\n", ITEMS);
    fprintf(stdout, "Stock/Warehouse:    %d\n", STOCK_PER_WAREHOUSE);
    fprintf(stdout, "Min Order Lines/Order: %d\n", MIN_OL_PER_ORDER);
    fprintf(stdout, "Max Order Lines/Order: %d\n", MAX_OL_PER_ORDER);
    fprintf(stdout, "New Orders/District: %d\n", NU_ORDERS_PER_DISTRICT);
    fprintf(stdout, "-----\n");
}

```

dbgen/tpccrnd.c

```

/*-----
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** disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
**-----*/

/*
 * tpccrnd.c - Random generation functions for TPC-C
 */

#include <stdio.h>
#include <string.h>
#include <math.h>
#include "db2tpcc.h"
#include "tpccmisc.h"
#include "ival.h"

static char tbl_cust[CUSTOMERS_PER_DISTRICT];

static char alnum[] =
    "0123456789abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ";

static char *last_name_parts[] =
{
    "BAR",
    "OUGHT",
    "ABLE",
    "PRI",
    "PRES",
    "ESE",
    "ANTI",
    "CALLY",
    "ATION",
    "EING"
};

/*-----
 * rand_integer
 *
 * create a uniform random numeric value of type integer, of random

```

```

 * value between lo and hi. Number is NOT placed in BUFFER, and IS
 * simply RETURNED.
 *
 * Routine RETURNS the VALUE.
 *
 * parameters
 * -----
 * lo end of acceptable value range
 * hi end of acceptable value range
 *
 * output
 * -----
 * random integer value RETURNED
 *
 *-----*/

int rand_integer ( int val_lo, int val_hi )
{
    return((random()%(val_hi-val_lo+1))+val_lo);
}

/*-----
 * rand_decimal
 *
 * create a uniform random numeric value of type double, of random
 * value between lo and hi with val_dec fractional digits.
 * Number is NOT placed in BUFFER, and IS simply RETURNED.
 *
 * Routine RETURNS the VALUE.
 *
 * parameters
 * -----
 * lo end of acceptable value range
 * hi end of acceptable value range
 * number of fractional digits
 *
 * output
 * -----
 * random double value RETURNED
 *
 *-----*/

double rand_decimal ( int val_lo, int val_hi, int val_dec )
{
    return(rand_integer(val_lo, val_hi)/pow(10.0, (double)val_dec));
}

/*-----
 * seed_1_3000
 *
 *-----*/

void seed_1_3000( void )
{
    int i;

    for (i = 0; i < CUSTOMERS_PER_DISTRICT; i++) {
        tbl_cust[i] = 0;
    }
}

/*-----
 * random_1_3000

```

```

 *
 *-----*/

int random_1_3000( void )
{
    static int i;
    static int x;

    x = rand_integer(0, CUSTOMERS_PER_DISTRICT - 1);

    for (i = 0; i < CUSTOMERS_PER_DISTRICT; i++)
    {
        if (tbl_cust[x] == 0)
        {
            tbl_cust[x] = 1;
            return(x+1);
        } else {
            x++;
        }
    }
    if (x == CUSTOMERS_PER_DISTRICT)
        x=0;
}

printf("\nfatal error in random_1_3000\n");
abort();
}

/*-----
 * initialize_random
 *
 *-----*/

void initialize_random(void)
{
    int t = current_time();

    srand(t);
    srandom(t);
}

/*-----
 * create_random_a_string
 *
 * create a random alphanumeric string, of random length between lo and
 * hi and place them in designated buffer. Routine returns the actual
 * length.
 *
 * parameters
 * -----
 * lo end of acceptable length range
 * hi end of acceptable length range
 *
 * output
 * -----
 * actual length
 * random alphanumeric string
 *
 *-----*/

int create_random_a_string( char *out_buffer, int length_lo, int length_hi )
{
    int i, actual_length;

```

```

actual_length = rand_integer( length_lo, length_hi );

for ( i = 0; i < actual_length; i++ )
{
    out_buffer[i] = alnum[rand_integer( 0, 61 )];
}
out_buffer[actual_length] = '\0';

return (actual_length);
}

/*
*****
* create_random_n_string
*
* create a random numeric string, of random length between lo and
* hi and place them in designated buffer. Routine returns the actual
* length.
*
* parameters
* -----
* lo end of acceptable length range
* hi end of acceptable length range
*
* output
* -----
* actual length
* random numeric string
*****
*/

int create_random_n_string( char *out_buffer, int length_lo, int length_hi )
{
    int i, actual_length;

    actual_length = rand_integer( length_lo, length_hi );

    for ( i = 0; i < actual_length; i++ )
    {
        out_buffer[i] = (char)rand_integer( 48,57 );
    }
    out_buffer[actual_length] = '\0';

    return (actual_length);
}

/*
*****
* NURand_val
*
* create a non-uniform random numeric value of type INTEGER, of random
* value between lo and hi. Number is NOT placed in BUFFER, and IS
* simply RETURNED.
*
* Routine RETURNS the VALUE.
*
* parameters
* -----
* lo end of acceptable value range
* hi end of acceptable value range
*
* output
* -----
* random integer value RETURNED
*****
*/

```

```

int NURand_val ( int A, int x, int y, int C )
{
    return((((rand_integer(0,A)|rand_integer(x,y))+C)%(y-x+1))+x);
}

/*
*****
* create_a_string_with_original
*
* create a random alphanumeric string, of random length between lo and
* hi and place them in designated buffer. Routine returns the actual
* length.
*
* the word "ORIGINAL" is placed at a random location in the buffer at
* random, for a given percent of the records.
*
* percent_to_set must be an integer value from 0 to 100.
* if 0, no records will be set. If 100, all records will be set.
*
* CANNOT USE ON STRINGS OF LENGTH LESS THAN 8 ! LOWER LIMIT MUST BE >
8 !
*
* parameters
* -----
* lo end of acceptable length range
* hi end of acceptable length range
* percentage of records to set to ORIGINAL
*
* output
* -----
* actual length
* random alphanumeric string with the word "ORIGINAL" is placed at a
* random location
*****
*/

int create_a_string_with_original( char *out_buffer, int length_lo,
int length_hi, int percent_to_set )
{
    int actual_length, start_pos;

    actual_length = create_random_a_string( out_buffer, length_lo, length_hi );

    if ( rand_integer( 1, 100 ) <= percent_to_set )
    {
        start_pos = rand_integer( 0, actual_length-8 );
        strncpy(out_buffer+start_pos,"ORIGINAL",8);
    }

    return (actual_length);
}

/*
*****
* create_random_last_name
*
* parameters:
* out_buffer - target buffer for the generated last name
*
* description:
* create_random_last_name generates a random number from 0 to 999
* inclusive. a random name is generated by associating a random string
* with each digit of the generated number. the three strings are
* concatenated to generate the name
*****
*/

int create_random_last_name(char *out_buffer, int cust_num)

```

```

{
    int random_num;

    if (cust_num == 0)
        random_num = NURand_val( A_C_LAST, 0, 999, C_C_LAST_LOAD );
    else
        random_num = cust_num - 1;

    strcpy(out_buffer, last_name_parts[random_num / 100]);
    random_num %= 100;
    strcat(out_buffer, last_name_parts[random_num / 10]);
    random_num %= 10;
    strcat(out_buffer, last_name_parts[random_num]);

    return(strlen(out_buffer));
}

include/db2tpcc.h

/*
*****
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*****
*/

/*
* db2tpcc.h - Macros and Miscellany
*
*/

#ifndef __DB2TPCC_H
#define __DB2TPCC_H

#include <sys/types.h>

#include "ival.h"

/* ***** */
/* Transaction Return Codes (s_transtatus) */
/* ***** */

#define INVALID_ITEM 100
#define TRAN_OK 0
#define FATAL_SQLERROR -1

/* ***** */
/* Definition of Unused and Bad Items */
/* ***** */
/* Define unused item ID to be 0. This allows the SUT to determine the
/* number of items in the order as required by 2.4.1.3 and 2.4.2.2 since
/* the assumption that any item with OL_I_ID = 0 is unused will be true.
/* This in turn requires that the value used for an invalid item is
/* equal to ITEMS + 1.
/* ***** */

#define INVALID_ITEM_ID (2 * ITEMS) + 1
#define UNUSED_ITEM_ID 0

#define MIN_WAREHOUSE 1
#define MAX_WAREHOUSE WAREHOUSES

/* ***** */
/* NURand Constants */

```

```

/* C_C_LAST_RUN and C_C_LAST_LOAD must adhere to clause 2.1.6. */
/* Analysis indicates that a C_LAST delta of 85 is optimal. */
/***** */
#define C_C_LAST_RUN 88
#define C_C_LAST_LOAD173
#define C_C_ID 319
#define C_OL_I_ID 3849
#define A_C_LAST 255
#define A_C_ID 1023
#define A_OL_I_ID 8191

/***** */
/* Transaction Type Identifiers */
/***** */

#define CLIENT_SQL 0
#define NEWORD_SQL 1
#define PAYMENT_SQL 2
#define ORDSTAT_SQL 3
#define DELIVERY_SQL 4
#define STOCKLEV_SQL 5

#define SPGENERAL_PAD 3
#define SPGENERAL_ADJUST sizeof(int16_t)

struct in_neword_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    struct in_items_struct {
        int32_t s_OL_I_ID;
        int32_t s_OL_SUPPLY_W_ID;
        int16_t s_OL_QUANTITY;
        int16_t pad1[3];
    } in_item[15];
    int32_t s_C_ID;
    int32_t s_W_ID;
    int16_t s_D_ID;
    int16_t s_O_OL_CNT; /* init by SUT */
    int16_t s_all_local;
    int16_t duplicate_items;
};

struct out_neword_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    struct items_struct {
        float s_I_PRICE;
        float s_OL_AMOUNT;
        int16_t s_S_QUANTITY;
        int16_t pad2;
        char s_I_NAME[25];
        char s_brand_generic;
    } item[15];
    float s_W_TAX;
    float s_D_TAX;
    float s_C_DISCOUNT;
    float s_total_amount;
    int32_t s_O_ID;
    int16_t s_O_OL_CNT;
    int16_t s_transtatus;
    int16_t deadlocks;
    char s_C_LAST[17];
    char s_C_CREDIT[3];
    char s_O_ENTRY_D_time[27];
};

struct in_payment_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];

```

```

    float s_H_AMOUNT;
    int32_t s_W_ID;
    int32_t s_C_W_ID;
    int32_t s_C_ID;
    int16_t s_C_D_ID;
    int16_t s_D_ID;
    char s_C_LAST[17];
};

struct out_payment_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    double s_C_CREDIT_LIM;
    double s_C_BALANCE;
    float s_C_DISCOUNT;
    int32_t s_C_ID;
    int16_t s_transtatus;
    int16_t deadlocks;
    char s_W_STREET_1[21];
    char s_W_STREET_2[21];
    char s_W_CITY[21];
    char s_W_STATE[3];
    char s_W_ZIP[10];
    char s_D_STREET_1[21];
    char s_D_STREET_2[21];
    char s_D_CITY[21];
    char s_D_STATE[3];
    char s_D_ZIP[10];
    char s_C_FIRST[17];
    char s_C_MIDDLE[3];
    char s_C_LAST[17];
    char s_C_STREET_1[21];
    char s_C_STREET_2[21];
    char s_C_CITY[21];
    char s_C_STATE[3];
    char s_C_ZIP[10];
    char s_C_PHONE[17];
    char s_C_CREDIT[3];
    char s_C_DATA[20];
    char s_H_DATE_time[27];
    char s_C_SINCE_time[27];
};

struct in_ordstat_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_C_ID;
    int32_t s_W_ID;
    int16_t s_D_ID;
    int16_t pad1[3];
    char s_C_LAST[17];
};

struct out_ordstat_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    double s_C_BALANCE;
    int32_t s_C_ID;
    int32_t s_O_ID;
    int16_t s_O_CARRIER_ID;
    int16_t s_ol_cnt;
    int16_t pad1[2];
    struct oitems_struct {
        double s_OL_AMOUNT;
        int32_t s_OL_I_ID;
        int32_t s_OL_SUPPLY_W_ID;
        int16_t s_OL_QUANTITY;
        int16_t pad2;
        char s_OL_DELIVERY_D_time[27];
    } item[15];
};

```

```

    int16_t s_transtatus;
    int16_t deadlocks;
    char s_C_FIRST[17];
    char s_C_MIDDLE[3];
    char s_C_LAST[17];
    char s_O_ENTRY_D_time[27];
    int16_t pad3[2];
};

struct in_delivery_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_W_ID;
    int16_t s_O_CARRIER_ID;
};

struct out_delivery_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_O_ID[10];
    int16_t s_transtatus;
    int16_t deadlocks;
};

struct in_stocklev_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_threshold;
    int32_t s_W_ID;
    int16_t s_D_ID;
};

struct out_stocklev_struct {
    int16_t len;
    int16_t pad[SPGENERAL_PAD];
    int32_t s_low_stock;
    int16_t s_transtatus;
    int16_t deadlocks;
};

/* ***** */
/* Transaction Prototypes */
/* ***** */

#ifdef __cplusplus
extern "C" {
#endif

extern int neword_sql(struct in_neword_struct*, struct out_neword_struct*);
extern int payment_sql(struct in_payment_struct*, struct out_payment_struct*);
extern int ordstat_sql(struct in_ordstat_struct*, struct out_ordstat_struct*);
extern int delivery_sql(struct in_delivery_struct*, struct out_delivery_struct*);
extern int stocklev_sql(struct in_stocklev_struct*, struct out_stocklev_struct*);

#ifdef __cplusplus
}
#endif

/* ***** */
/* DB2 Connect/Disconnect & Thread Context Wrappers */
/* ***** */

#ifdef __cplusplus
extern "C" {
#endif

extern int connect_to_TM(char*);
extern int connect_to_TM_auth(char*, char*, char*);
extern int disconnect_from_TM(void);

```

```

#ifdef __cplusplus
}
#endif

#ifdef __DB2TPCC_H

```

include/lval.h

```

#ifdef __LVAL_H
#define __LVAL_H
#define WAREHOUSES 41600
#define DISTRICTS_PER_WAREHOUSE 10
#define CUSTOMERS_PER_DISTRICT 3000
#define ITEMS 100000
#define STOCK_PER_WAREHOUSE 100000
#define MIN_OL_PER_ORDER 5
#define MAX_OL_PER_ORDER 15
#define NU_ORDERS_PER_DISTRICT 900
#endif // __LVAL_H

```

include/platform.h

```

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*****/

```

```

/*
 * platform.h - Platform Isolation Layer
 */

```

```

#ifdef __PLATFORM_H
#define __PLATFORM_H

```

```

/*****
/* Generic Macros */
/*****
#define GEN_ERRCODE errno

```

```

/*****
/* Windows I/O Macros */
/*****

```

```

/*****
/* UNIX I/O Macros */
/*****
#include <fcntl.h>

```

```

#define IOH_INIT(hnd, type, name)
hnd->fd = -1;
hnd->type = type;
hnd->name = name;

```

```

#define IOH_CREATE(hnd)
if (hnd->type == IOH_PIPE) {
rc = mkfifo(hnd->name, 0666);
} else {
rc = 0;
}

```

```

#define IOH_OPEN(hnd)
if (hnd->type == IOH_FILE_APPEND) {
hnd->fd = open(hnd->name, O_WRONLY | O_CREAT | O_APPEND, 0666);
} else {
hnd->fd = open(hnd->name, O_WRONLY | O_CREAT | O_TRUNC, 0666);
}
if (hnd->fd == -1) {
rc = -1;
} else {
rc = 0;
}

```

```

#define IOH_WRITE(hnd, buff, num, num2)
rc = write(hnd->fd, buff, num);
if (rc >= 0) {
num2 = rc;
rc = 0;
}

```

```

#define IOH_FLUSH(hnd) rc = 0;
#define IOH_CLOSE(hnd) rc = close(hnd->fd);
#define IOH_DELETE(hnd) if (hnd->type == IOH_PIPE) { rc = unlink(hnd->name); }

```

```

typedef unsigned int IOH_NUM;
typedef int IOH_HND;

```

```

/*****
/* UNIX Semaphore Macros */
/*****

```

```

#include <sys/types.h>
#include <sys/ipc.h>
#include <sys/sem.h>

```

```

union semun {
int val;
struct semid_ds *buf;
unsigned short int *array;
} semUnion;

```

```

struct sembuf semBuf;

```

```

#define SEM_HANDLE int

```

```

#define SEM_INIT(hnd, x, name)
if ( (hnd = semget(IPC_PRIVATE, 1, IPC_CREAT | IPC_EXCL | S_IRUSR | S_IWUSR | S_IRGRP | S_IWGRP | S_IROTH | S_IWOTH)) == -1)
API_ERROR(__LINE__, "semget", (rc=GEN_ERRCODE));
semUnion.val = x;
if ( semctl(hnd, 0, SETVAL, semUnion) < 0 )
API_ERROR(__LINE__, "semctl SETVAL", (rc=GEN_ERRCODE));

```

```

#define SEM_WAIT(hnd)
semBuf.sem_num = 0;
semBuf.sem_op = -1;
semBuf.sem_flg = SEM_UNDO;
if ( semop(hnd, &semBuf, 1) < 0 )
API_ERROR(__LINE__, "semop wait", (rc=GEN_ERRCODE));

```

```

#define SEM_FREE(hnd)
semBuf.sem_num = 0;
semBuf.sem_op = 1;
semBuf.sem_flg = SEM_UNDO;
if ( semop(hnd, &semBuf, 1) < 0 )
API_ERROR(__LINE__, "semop free", (rc=GEN_ERRCODE));

```

```

#define SEM_DESTROY(hnd)
if ( semctl(hnd, 0, IPC_RMID, 0) )
API_ERROR(__LINE__, "semctl IPC_RMID", (rc=GEN_ERRCODE));

```

```

/*****
/* Common I/O Macros and Definitions */
/*****

```

```

#define IOH_FILE 1
#define IOH_PIPE 2
#define IOH_FILE_APPEND 3

```

```

#define IOH_ERRMSG(hnd, msg)
if (rc != 0) {
fprintf(stderr, "Error %d %s fd %d (%d, %s)\n", GEN_ERRCODE, msg,
hnd->fd, hnd->type, hnd->name);
return rc;
}

```

```

struct _ioh {
IOH_HND fd;
int type;
char *name;
};

```

```

typedef struct _ioh ioHandle;

```

```

/*****
/* Generic I/O Routine Prototypes */
/*****

```

```

int GenericOpen(ioHandle *hnd, int type, char *name);
int GenericWrite(ioHandle *hnd, char *Buffer, unsigned int numBytes);
int GenericClose(ioHandle *hnd);

```

```

/*****
/* Generic I/O Routines */
/*****

```

```

int GenericOpen(ioHandle *hnd, int type, char *name)
{
int rc = 0;

```

```

IOH_INIT(hnd, type, name)

```

```

IOH_CREATE(hnd)
IOH_ERRMSG(hnd, "creating")

```

```

IOH_OPEN(hnd)
IOH_ERRMSG(hnd, "opening")

```

```

return rc;
}

```

```

int GenericWrite(ioHandle *hnd, char *Buffer, unsigned int numBytes)
{
int rc = 0;
int numBytesWritten = -1;

```

```

IOH_WRITE(hnd, Buffer, numBytes, numBytesWritten)
IOH_ERRMSG(hnd, "writing")

```

```

if (numBytes != numBytesWritten) {
fprintf(stderr, "Truncated data writing to fd %d (%d, %s)\n", hnd->fd, hnd->type, hnd->name);
rc = -1;
}

```

```

return rc;
}

```

```

int GenericClose(ioHandle *hnd)
{
int rc = 0;

```

```

IOH_FLUSH(hnd)
IOH_ERRMSG(hnd, "flushing")

```

```
IOH_CLOSE(hnd)
IOH_ERRMSG(hnd, "closing")

IOH_DELETE(hnd)
IOH_ERRMSG(hnd, "deleting")
```

```
return rc;
}
```

```
#endif // __PLATFORM_H
```

include/tpccmisc.h

```
/*
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```

```
/*
* tpccmisc.h - Miscellaneous Routines
*
*/
```

```
#ifndef __TPCCMISC_H
#define __TPCCMISC_H
```

```
extern double current_time_ms(void);
extern double current_time(void);
```

```
#include <time.h>
#define createTimeStampString(buf)
{
time_t now;
struct tm *tm;
time(&now);
tm = localtime(&now);
sprintf(buf,
"%4.4d-%2.2d-%2.2d %2.2d:%2.2d:%2.2d",
tm->tm_year + 1900, tm->tm_mon + 1, tm->tm_mday, \
tm->tm_hour, tm->tm_min, tm->tm_sec);
}
```

```
#endif // __TPCCMISC_H
```

include/tpccrnd.h

```
/*
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**/
```

```
/*
* tpccrnd.h - Random generation functions for TPC-C
*
*/
```

```
#ifndef __TPCCRND_H
#define __TPCCRND_H
```

```
void initialize_random(void);
int rand_integer( int val_lo, int val_hi );
double rand_decimal( int val_lo, int val_hi, int val_dec );
int NUrands_val( int A, int val_lo, int val_hi, int C );
```

```
void seed_1_3000( void );
int random_1_3000( void );
```

```
int create_random_a_string( char *out_buffer,
int length_lo,
int length_hi );
```

```
int create_random_n_string( char *out_buffer,
int length_lo,
int length_hi );
```

```
int create_a_string_with_original( char *out_buffer,
int length_lo,
int length_hi,
int percent_to_set );
```

```
int create_random_last_name(char *out_buffer, int cust_num);
```

```
#endif // __TPCCRND_H
```

tpccenv.sh

```
#####
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#####
```

```
#
# tpccenv.sh - UNIX Environment Setup
#
```

```
# The Kit Version
export TPCC_VERSION=CK060815
```

```
# The DB2 Instance Name (for DB2)
export DB2INSTANCE=${USER}
```

```
# The OS being used (i.e. "UNIX", "LINUX", "WINDOWS")
export PLATFORM=LINUX
```

```
# The type of make command and slash used by the OS.
# (i.e. UNIX - "/", WINDOWS - "\").
# These are referenced all over the kit.
export SLASH="/";
export MAKE=make
```

```
# Specifies whether or not to use dari stored proc's for the TPC-C driver. Set to either
DARVERSION or NONDARI;
#export TPCC_SPTYPE=NOSP
#export TPCC_SPTYPE=SPGENERAL2
```

```
export TPCC_SPTYPE=SPGENERAL
#export TPCC_SPTYPE=DARI2SQLDA
```

```
export DB2VERSION=v8
```

```
# The schema name is typically the SQL authorization ID (or username).
# This is required for runstats and EEE.
export TPCC_SCHEMA=${USER}
```

```
# DB2 EE/EEE Configuration
export DB2EDITION=EE
#export DB2EDITION=EEE
export DB2NODE=0
export DB2NODES=1; # set to the number of nodes you have. Set to 1 for EE.
```

```
# TPCC General Configuration
export TPCC_DBNAME=TPCC
export TPCC_ROOT=${HOME}/tpc-c.ibm
export TPCC_SQLLIB=${HOME}/sqllib
export TPCC_RUNDATA=${HOME}/tpccdata
```

```
# TPCC Debug Configuration
# This is the path where all error and debug logs are placed.
# To get debugging from within the stored procedures, you must
# set DB2ENVLIST="TPCC_DEBUGDIR" in tpcc.config.
export TPCC_DEBUGDIR=/tmp
```

```
# Specifies where stored procedures should be placed and if they should
# be fenced.
export TPCC_SPDIR=${TPCC_SQLLIB}/function
export TPCC_FENCED=NO
```

12 Appendix D: Pricing



March 13, 2007

IBM Corporation
Ms. Celia Schreiber
xSeries Performance

Dear Celia:

The table shown below lists the U.S. pricing for DB2 9 Data server product that has been used in the TPC-C Benchmark.

All prices shown are in U.S. Dollars.

DB2 Enterprise Server Edition (ESE)	VUs	Reference Price per value unit	Total Reference price
DB2 Enterprise Proc 9 Lic/1 year Maintenance	800	270.59	216,472
SW Maintenance Renewal - 1 year	1600	12.89	20,624
		Sub-total reference price for DB2 ESE:	230,136
		TOTAL REFERENCE PRICE:	237,096

Any and all prices herein are suggested prices only and are subject to change at IBM's sole discretion. Products listed herein are subject to withdrawal or modification by IBM at any time at IBM's sole discretion.

Sincerely,

Richard Hughes
IBM Sales & Distribution, Software Sales
Americas Sales Executive DB2 and Informix
212-493-2065
rhughes@us.ibm.com

Microsoft Corporation
One Microsoft Way
Redmond, WA 98052-6399

Tel 425 882 8080
Fax 425 936 7329
<http://www.microsoft.com/>

Microsoft

February 13, 2007

IBM Corporation
Chris King
3079 Cornwallis Road
Durham, NC 27709

Here is the information you requested regarding pricing for several Microsoft products to be used in conjunction with your TPC-C benchmark testing.

All pricing shown is in US Dollars (\$).

Part Number	Description	Unit Price	Quantity	Price
254-00170	Microsoft Visual C++ .Net Standard 2003 <i>Full License No Discounts Applied</i>	\$109	1	\$109
N/A	Microsoft Problem Resolution Services <i>Professional Support (1 Incident)</i>	\$245	1	\$245


All products are currently orderable through Microsoft's normal distribution channels. A list of Microsoft's resellers can be found at <http://www.microsoft.com/products/info/render.aspx?view=22&type= mnp&content=22/licensing>

Defect support is included in the purchase price. Additional support is available from Microsoft PSS on an incident by incident basis at \$245 per call.

This quote is valid for the next 90 days.

If we can be of any further assistance, please contact Jamie Reding at (425) 703-0510 or jamiere@microsoft.com.

Reference ID: PCchki0721300006118.
Please include this Reference ID in any correspondence regarding this price quote.


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<input type="checkbox"/>	Qty.	Product Description	Savings	Total Price
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Subtotal: \$2.99

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