데이터베이스 실습 6

실습 내용

- 사용자 계정 만들기
- TPC-DS 데이터 적재
- 쿼리 수행 가이드
- 실행계획 보기

TPC-DS 사용을 위한 사용자 계정 만들기

TPC-DS 실습 진행을 위해 계정을 새로 생성해보겠습니다. SYS 유저로 접속하여 테이블스페이스를 먼저 생성합니다.

```
root [XE] $ sqlplus sys/oracle_4U as sysdba

SQL*Plus: Release 11.2.0.2.0 Production on Mon Jun 10 12:11:09 2019

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Connected to:
Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit Production

SQL> CREATE TABLESPACE tpcds
  datafile '/u01/app/oracle/oradata/XE/tpcds.dbf'
 size 2G
 autoextend on
 extent management local;

 Tablespace created.
```

사용자를 생성합니다.

```
SQL> create user tpcds identified by tpcds
  default tablespace tpcds;
 2
 User created.
```

사용자를 생성하면 접속에 필요한 자원을 주어야 합니다. 연결 권한을 부여하고 모든 권한을 부여하겠습니다.

```
SQL> grant resource, connect to tpcds;

Grant succeeded.

SQL> grant all privileges to tpcds;

Grant succeeded.
```

TPC-DS 데이터 적재

TPC-DS 데이터를

```
SQL> conn tpcds/tpcds
Connected.

SQL> @/tmp/tpcds/queries/tpcds_table_ddl.sql

Table created.
```

```
SQL> exit
Disconnected from Oracle Database 11g Express Edition Release 11.2.0.2.0 - 64bit
Production
```

적재하려는 데이터를 한 번 확인해 보겠습니다.

```
root [XE] $ ls /tmp/tpcds/dataset/
call_center.dat          household_demographics.dat  store_sales.dat
catalog_page.dat         income_band.dat             time_dim.dat
catalog_returns.dat      inventory.dat               warehouse.dat
catalog_sales.dat        item.dat                    web_page.dat
customer_address.dat     promotion.dat               web_returns.dat
customer.dat             reason.dat                  web_sales.dat
```

```
customer_demographics.dat  ship_mode.dat            web_site.dat
date_dim.dat               store.dat
dbgen_version.dat          store_returns.dat


root [XE] $ cat /tmp/tpcds/dataset/call_center.dat
1|AAAAAAAABAAAAAAA|1998-01-01|||2450952|NY Metro|large|2|1138|8AM-4PM|Bob
Belcher|6|More than other authori|Shared others could not count fully dollars. New
members ca|Julius Tran|3|pri|6|cally|730|Ash Hill|Boulevard|Suite
0|Midway|Williamson County|TN|31904|United States|-5|0.11|
2|AAAAAAAACAAAAAAA|1998-01-01|2000-12-31||2450806|Mid
Atlantic|medium|6|2268|8AM-8AM|Felipe Perkins|2|A bit narrow forms matter animals.
Consist|Largely blank years put substantially deaf, new others. Question|Julius
Durham|5|anti|1|ought|984|Center Hill|Way|Suite 70|Midway|Williamson
County|TN|31904|United States|-5|0.12|
3|AAAAAAAACAAAAAAA|2001-01-01|||2450806|Mid Atlantic|medium|6|4134|8AM-
4PM|Mark Hightower|2|Wrong troops shall work sometimes in a opti|Largely blank
years put substantially deaf, new others. Question|Julius
Durham|1|ought|2|able|984|Center Hill|Way|Suite 70|Midway|Williamson
County|TN|31904|United States|-5|0.01|
4|AAAAAAAAEAAAAAAA|1998-01-01|2000-01-01||2451063|North
Midwest|medium|1|649|8AM-4PM|Larry Mccray|2|Dealers make most historical, direct
students|Rich groups catch longer other fears; future,|Matthew
Clifton|4|ese|3|pri|463|Pine Ridge|RD|Suite U|Midway|Williamson
County|TN|31904|United States|-5|0.05|
5|AAAAAAAAEAAAAAAA|2000-01-02|2001-12-31||2451063|North
Midwest|small|3|795|8AM-8AM|Larry Mccray|2|Dealers make most historical, direct
students|Blue, due beds come. Politicians would not make far thoughts. Specifically new
horses partic|Gary Colburn|4|ese|3|pri|463|Pine Ridge|RD|Suite U|Midway|Williamson
County|TN|31904|United States|-5|0.12|
6|AAAAAAAAEAAAAAAA|2002-01-01|||2451063|North Midwest|medium|7|3514|8AM-
4PM|Larry Mccray|5|Silly particles could pro|Blue, due beds come. Politicians would not
make far thoughts. Specifically new horses partic|Gary Colburn|5|anti|3|pri|463|Pine
Ridge|RD|Suite U|Midway|Williamson County|TN|31904|United States|-5|0.11|
```

```
root [XE] $ for (( x = 0 ; x < 24 ; x++ )); do  sqlldr tpcds/tpcds
control=/tmp/tpcds/ctl/${x}.ctl direct=true; done

SQL*Loader: Release 11.2.0.2.0 - Production on Mon Jun 10 12:28:04 2019

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<중략>

Load completed - logical record count 30.
```

데이터 적재가 완료 되었습니다.

TPC-DS 데이터 적재

TPC-DS 데이터를

root [XE] $ cd /tmp/tpcds/queries/
root [queries] $

```
SQL> explain plan for
  2  @query1.sql

Explained.

SQL> SELECT * FROM TABLE(dbms_xplan.display);

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------
Plan hash value: 3710660489

--------------------------------------------------------------------------------
--------------------------------

| Id  | Operation                     | Name                | Rows  |
 Bytes | Cost (%CPU)| Time     |

--------------------------------------------------------------------------------
--------------------------------


PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------
|   0 | SELECT STATEMENT              |                     |     1 |
   18 |  1423   (2)| 00:00:18 |

|   1 |  TEMP TABLE TRANSFORMATION        |                     |      |
     |          |        |

|   2 |   LOAD AS SELECT              | SYS_TEMP_0FD9D6602_647D3 |      |
```

```
    |        |       |

|  3 |   HASH GROUP BY              |                  |  2210 |
  168K|  1400   (2)| 00:00:17 |

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------

|*  4 |    HASH JOIN                 |                  |  2210 |
  168K|  1399   (2)| 00:00:17 |

|*  5 |     TABLE ACCESS FULL          | DATE_DIM             |   15 |
  390 |   379   (1)| 00:00:05 |

|  6 |     TABLE ACCESS FULL          | STORE_RETURNS        |  274K|
   13M|  1017   (2)| 00:00:13 |

|*  7 |   COUNT STOPKEY               |                  |      |

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------
    |        |       |

|  8 |   VIEW                       |                  |    1 |
   18 |   23  (14)| 00:00:01 |

|*  9 |    SORT ORDER BY STOPKEY       |                  |    1 |
  113 |   23  (14)| 00:00:01 |

|  10 |     NESTED LOOPS             |                  |      |
    |        |       |


PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------
|  11 |      NESTED LOOPS            |                  |    1 |
  113 |   22  (10)| 00:00:01 |

|* 12 |      HASH JOIN               |                  |    1 |
   82 |   21  (10)| 00:00:01 |

|  13 |       NESTED LOOPS           |                  |      |
    |        |       |

|  14 |        NESTED LOOPS          |                  |    1 |
   56 |   11   (0)| 00:00:01 |

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------
```

```
| 15 |         VIEW                |                    |  2210 |
 86190 |    8   (0)| 00:00:01 |

|  16 |         TABLE ACCESS FULL       | SYS_TEMP_0FD9D6602_647D3 |  2210 |
 86190 |    8   (0)| 00:00:01 |

|* 17 |         INDEX UNIQUE SCAN       | SYS_C007344            |    1 |
     |    0   (0)| 00:00:01 |

|* 18 |        TABLE ACCESS BY INDEX ROWID| STORE                |    1 |

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------
   17 |    1   (0)| 00:00:01 |

|  19 |       VIEW                  | VW_SQ_1              |  2210 |
 57460 |    9  (12)| 00:00:01 |

|  20 |        HASH GROUP BY           |                    |  2210 |
 57460 |    9  (12)| 00:00:01 |

|  21 |         VIEW                |                    |  2210 |
 57460 |    8   (0)| 00:00:01 |


PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------
|  22 |         TABLE ACCESS FULL       | SYS_TEMP_0FD9D6602_647D3 |  2210 |
 86190 |    8   (0)| 00:00:01 |

|* 23 |       INDEX UNIQUE SCAN          | SYS_C007350            |    1 |
     |    0   (0)| 00:00:01 |

|  24 |      TABLE ACCESS BY INDEX ROWID   | CUSTOMER             |    1 |
   31 |    1   (0)| 00:00:01 |

--------------------------------------------------------------------------------
--------------------------------

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------


Predicate Information (identified by operation id):
---------------------------------------------------

   4 - access("SR_RETURNED_DATE_SK"="D_DATE_SK")
   5 - filter("D_YEAR"=2000)
   7 - filter(ROWNUM<=100)
   9 - filter(ROWNUM<=100)
```

```
  12 - access("CTR1"."CTR_STORE_SK"="ITEM_0")
       filter("CTR1"."CTR_TOTAL_RETURN">"AVG(CTR_TOTAL_RETURN)*1.2")

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------
  17 - access("S_STORE_SK"="CTR1"."CTR_STORE_SK")
  18 - filter("S_STATE"='SD')
  23 - access("CTR1"."CTR_CUSTOMER_SK"="C_CUSTOMER_SK")

Note
-----
   - dynamic sampling used for this statement (level=2)

48 rows selected.

SQL> linesize 200
SP2-0734: unknown command beginning "linesize 2..." - rest of line ignored.
SQL> set linesize 200
SQL> explain plan for
  2  @query1.sql

Explained.

SQL> SELECT * FROM TABLE(dbms_xplan.display);

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------
Plan hash value: 1724917922

-------------------------------------------------------------------------------------------------------------------
| Id  | Operation                     | Name                | Rows  | Bytes | Cost (%CPU)| Time     |
-------------------------------------------------------------------------------------------------------------------
|   0 | SELECT STATEMENT              |                     |     1 |    18 |  1423   (2)| 00:00:18 |
|   1 |  TEMP TABLE TRANSFORMATION    |                     |       |       |            |          |
|   2 |   LOAD AS SELECT              | SYS_TEMP_0FD9D6603_647D3 |       |       |            |          |
|
|   3 |    HASH GROUP BY              |                     |  2210 |   168K|  1400   (2)| 00:00:17 |
|*  4 |     HASH JOIN                 |                     |  2210 |   168K|  1399   (2)| 00:00:17 |
|*  5 |      TABLE ACCESS FULL        | DATE_DIM            |    15 |   390 |   379   (1)|
00:00:05 |

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------
|   6 |      TABLE ACCESS FULL        | STORE_RETURNS       |   274K|    13M|  1017   (2)|
00:00:13 |
|*  7 |   COUNT STOPKEY               |                     |       |       |            |          |
|   8 |   VIEW                        |                     |     1 |    18 |    23  (14)| 00:00:01 |
|*  9 |    SORT ORDER BY STOPKEY      |                     |     1 |   113 |    23  (14)| 00:00:01 |
```

```
|  10 |     NESTED LOOPS               |                  |      |      |         |        |
|  11 |      NESTED LOOPS              |                  |      1 |   113 |    22  (10)| 00:00:01 |
|* 12 |       HASH JOIN                |                  |    1 |    82 |    21  (10)| 00:00:01 |
|  13 |        NESTED LOOPS            |                  |      |      |         |        |
|  14 |         NESTED LOOPS           |                  |    1 |    56 |    11   (0)| 00:00:01 |
|  15 |          VIEW                  |                  | 2210 | 86190 |     8   (0)| 00:00:01 |
|  16 |           TABLE ACCESS FULL    | SYS_TEMP_0FD9D6603_647D3 | 2210 | 86190 |
8   (0)| 00:00:01 |

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------
|* 17 |          INDEX UNIQUE SCAN     | SYS_C007344            |    1 |      |     0   (0)| 00:00:01
|
|* 18 |         TABLE ACCESS BY INDEX ROWID| STORE                |    1 |    17 |     1   (0)|
00:00:01 |
|  19 |        VIEW                    | VW_SQ_1                |  2210 | 57460 |     9  (12)| 00:00:01 |
|  20 |         HASH GROUP BY          |                        |  2210 | 57460 |     9  (12)| 00:00:01 |
|  21 |          VIEW                  |                        | 2210 | 57460 |     8   (0)| 00:00:01 |
|  22 |           TABLE ACCESS FULL    | SYS_TEMP_0FD9D6603_647D3 | 2210 | 86190 |
8   (0)| 00:00:01 |
|* 23 |       INDEX UNIQUE SCAN        | SYS_C007350            |    1 |      |     0   (0)| 00:00:01
|
|  24 |      TABLE ACCESS BY INDEX ROWID   | CUSTOMER               |    1 |    31 |     1   (0)|
00:00:01 |
--------------------------------------------------------------------------------------------------------------------

Predicate Information (identified by operation id):

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------
---------------------------------------------------

   4 - access("SR_RETURNED_DATE_SK"="D_DATE_SK")
   5 - filter("D_YEAR"=2000)
   7 - filter(ROWNUM<=100)
   9 - filter(ROWNUM<=100)
  12 - access("CTR1"."CTR_STORE_SK"="ITEM_0")
       filter("CTR1"."CTR_TOTAL_RETURN">"AVG(CTR_TOTAL_RETURN)*1.2")
  17 - access("S_STORE_SK"="CTR1"."CTR_STORE_SK")
  18 - filter("S_STATE"='SD')
  23 - access("CTR1"."CTR_CUSTOMER_SK"="C_CUSTOMER_SK")

PLAN_TABLE_OUTPUT
--------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------

Note
-----
```

```
   - dynamic sampling used for this statement (level=2)

48 rows selected.
```