DTGen Demonstration #1

Developed by DMSTEX (http://dmstex.com)

Table of Contents

Introduction:

The set of exercises in this demonstration is focused on basic DTGen functionality. All functionality in this demonstration is available through both command line and graphical user interface (GUI) forms. For simplicity in understanding the under-lying workings of DTGen, this demonstration is conducted entirely by command-line. (No GUIs will be injured during the execution of this demonstration.)

This demonstration directory contains several exercises. The exercises are numbered and must be executed in sequential order. The demo users must be created with the "create_demo_users.sql" script in the parent directory before the first exercise is run. The demo users must be dropped with the "drop_demo_users.sql" script before the "create_demo_users.sql" script can be re-used. The exercises also assume that the default username/password (dtgen/dtgen) is still in use for the generator. Names and passwords are set at the top of each script and can be modified, if necessary. Also, the DTGen database objects must be installed in the database and ready to generate code.

Exercise #1: Basic Generation

Command Line:

```
sqlplus /nolog @e1
```

Based on Oracle's demobld.sql script, this exercise implements the EMP and DEPT tables using DTGen. The script for this exercise performs the following functions:

1. Removes any old DEMO1 Items from DTGEN

2. Creates new DEMO1 Items in DTGEN
3. Generates the DEMO1 Application in DTGEN
4. Creates the "install_db.sql" script
5. Runs the "install_db.sql" script
6. Loads and Reports Data

Steps 1-3 are captured in the "e1.LST" file:

```
Login to dtgen
Connected.
Remove old DEMO Schema from DTGEN
create a DEMO Schema in DTGEN
Generate Demo1 Application
Capture install_db.sql Script
```

Step 4 is captured in the "install_db.sql" file. This file is 78,281 bytes and has 3,145 lines. It is not listed here

Steps 5 and 6 are captured in the "install.LST" file:

```
Login to dtgen_db_demo
Connected.

FILE_NAME
-----------------
 -) create_glob

FILE_NAME
----------------
 -) create_ods

TABLE_NAME
--------------
***  dept  ***

TABLE_NAME
-------------
***  emp  ***

FILE_NAME
-----------------
 -) create_integ

TABLE_NAME
--------------
***  dept  ***

TABLE_NAME
-------------
***  emp  ***

FILE_NAME
-----------------
 -) create_oltp

TABLE_NAME
--------------
***  dept  ***

TABLE_NAME
-------------
***  emp  ***

FILE_NAME
-----------------
 -) create_mods

    DEPTNO DNAME          LOC
---------- -------------- -------------
        10 ACCOUNTING     NEW YORK
        20 RESEARCH       DALLAS
        30 SALES          CHICAGO
        40 OPERATIONS     BOSTON
```

```
     EMPNO ENAME            JOB        M_EMP_NK1 HIREDATE         SAL D_DEPT_NK1
---------- ---------------- --------- ---------- --------- ---------- ----------
      7782 CLARK            MANAGER         7839 09-JUN-81       2450         10
      7698 BLAKE            MANAGER         7839 01-MAY-81       2850         30
      7566 JONES            MANAGER         7839 02-APR-81       2975         20
      7902 FORD             ANALYST         7566 03-DEC-81       3000         20
      7788 SCOTT            ANALYST         7566 09-DEC-82       3000         20
      7876 ADAMS            CLERK           7788 12-JAN-83       1100         20
      7369 SMITH            CLERK           7902 17-DEC-80        800         20
      7900 JAMES            CLERK           7698 03-DEC-81        950         30
      7844 TURNER           SALESMAN        7698 08-SEP-81       1500         30
      7654 MARTIN           SALESMAN        7698 28-SEP-81       1250         30
      7521 WARD             SALESMAN        7698 22-FEB-81       1250         30

     EMPNO ENAME            JOB        M_EMP_NK1 HIREDATE         SAL D_DEPT_NK1
---------- ---------------- --------- ---------- --------- ---------- ----------
      7499 ALLEN            SALESMAN        7698 20-FEB-81       1600         30
      7934 MILLER           CLERK           7782 23-JAN-82       1300         10
      7839 KING             PRESIDENT            17-NOV-81       5000         10
```

Exercise #2: Sequences and Surrogate Primary Keys

Command Line:

```
sqlplus /nolog @e2
```

In the exercise #1, a basic generation was completed. The results of that generation were loaded into a new schema. This exercise, and the following exercises, will examine more closely what was generated. In this exercise, the use of sequences and surrogate keys are reviewed.

Exercise #2 has 4 queries. The first query shows the sequences that were generated by DTGen for each of the tables DEPT and EMP.

```
SEQUENCE_NAME
------------------------------
DEPT_SEQ
EMP_SEQ

TABLE_NAME           CONSTRAINT_NAME      COLUMN_NAME            POSITION
-------------------- -------------------- -------------------- ----------
DEPT                 DEPT_PK              ID                            1
EMP                  EMP_PK               ID                            1
```

Every table that is defined in DTGen gets a sequence. That sequence is used to generate a surrogate key for each record in the table. The surrogate key is the primary key for the record. The surrogate keys for the DEPT and EMP tables can be seen in the results of the second 2 queries:

```
        ID     DEPTNO DNAME          LOC
---------- ---------- -------------- -------------
         1         10 ACCOUNTING     NEW YORK
         2         20 RESEARCH       DALLAS
         3         30 SALES          CHICAGO
         4         40 OPERATIONS     BOSTON

        ID      EMPNO ENAME              M_MGR_ID  D_DEPT_ID
---------- ---------- ---------------- ---------- ----------
         1       7839 KING                                 1
         2       7566 JONES                     1          2
         3       7788 SCOTT                     2          2
         4       7876 ADAMS                     3          2
         5       7902 FORD                      2          2
         6       7369 SMITH                     5          2
         7       7698 BLAKE                     1          3
         8       7499 ALLEN                     7          3
         9       7521 WARD                      7          3
        10       7654 MARTIN                    7          3
        11       7844 TURNER                    7          3
```

```
        ID      EMPNO ENAME              M_MGR_ID  D_DEPT_ID
---------- ---------- ---------------- ---------- ----------
        12       7900 JAMES                     7          3
        13       7782 CLARK                     1          1
        14       7934 MILLER                   13          1
```

Notice that "D_DEPT_ID" is a foreign key to "ID" in the DEPT table. Also, "M_MGR_ID" is a foriegn key to "ID" in the EMP table. These surrogate keys are used to maintain referential integrity across foreign keys.

Exercise #3: Indexed Foreign Keys and Natural Keys

Command Line:

```
sqlplus /nolog @e3
```

In this exercise, indexes on foreign keys and natural keys are explored.

```
CONSTRAINT_NAME TABLE_NAME      COLUMN_NAME       POSITION INDEX_NAME
--------------- --------------- --------------- ---------- ---------------
DEPT_NK         DEPT            DEPTNO                  1 DEPT_NK
EMP_FK1         EMP             M_MGR_ID                1 EMP_FX1
EMP_FK2         EMP             D_DEPT_ID               1 EMP_FX2
EMP_NK          EMP             EMPNO                   1 EMP_NK
```

There is a natural key on each of the 2 tables, which is confirmed by constraints "DEPT_NK" and "EMP_NK". Also, the EMP table has 2 foreign keys, which are confirmed by constraints "EMP_FK1" and "EMP_FK2". Note that all natural keys and foreign keys have indexes.

Exercise #4: Natural Key Updatable Views

Exercise #5: Full Path Hierarchy Data

Exercise #6: Enforced Descrete Domains

Exercise #7: Enforced Case Folding

Exercise #8: Full Procedural APIs

Exercise #9: Custom Check Constraints