EAST TENNESSEE STATE UNIVERSITY

CSCI 2020 – Database Fundamentals

Lab 10 – SQL DDL

This lab is worth 35 points.

Header Comments

Now that your database is clean, open up a new SQL Worksheet for your connection to PYTHIA. Enter the following comments into your SQL Worksheet in SQL Developer. You will include this block of comments at the beginning of ALL SQL FILES you submit. **This, as with all submissions, will receive a 10% deduction if this header block is not included.**

```
/*
--------------------------------------------------------------------------------
Programmer's Name: Im A. Student
Course: CSCI 2020 Section Number: 201
Creation Date: 03/25/2014 Date of Last Modification: 03/25/2014
E-mail Address:studentia@etsu.edu
--------------------------------------------------------------------------------
Purpose -
   Lab 10 - SQL DDL
--------------------------------------------------------------------------------
Identifier dictionary -
   Not Applicable
--------------------------------------------------------------------------------
Notes and Assumptions -
--------------------------------------------------------------------------------
*/
```

In Oracle, single-line comments begin with dash-dash (`--`). This behaves exactly like Java's slash-slash comments (//). Multi-line comments in Oracle are between `/*` and `*/`, as they are in Java.

Save your file as LastnameFirstinitial_Lab10.sql (e.g., RezwanaT_Lab10.sql).

Part 1: Dealing with Tables (15 Points)

When you log into Oracle, you have access to your own personal scratchpad called a SCHEMA. You are the schema OWNER. By default, only you and database administrators have access to data inside your schema. Either you or the DBA may grant access to your data to other users. For now, forget about granting others access. You are first going to create some tables! After all, you can't do much in a database without them. Exciting, I know.

1. Create the Artist table by typing the following command into SQL Developer. Place the command after the Header Comments. Note the spacing, indentation, capitalization, and style. This is standard practice when working with SQL. After typing the command in SQL Developer, highlight it with the mouse and press the Play button, or press F5. If there were no errors, the table will now be in your schema. If you receive an error with the DROP TABLE statement, on the first run, you may ignore it. **(2 points)**

```
-- 1.1: Create Artist Table
DROP TABLE Artist CASCADE CONSTRAINTS;

CREATE TABLE Artist (
    Artist_ID NUMBER(5,0),
    First_Name VARCHAR2(15) NOT NULL,
    Last_Name VARCHAR2(15) NOT NULL,
    Street VARCHAR2(25) NOT NULL,
    City VARCHAR2(15) NOT NULL,
    State CHAR(2) NOT NULL,
    DateofBirth DATE
);
```

2. Next, you should test that the table is in your schema. Type the following command after the CREATE statement. Highlight it and run it. If successful, save the file and move the step 3. **(1 point)**

```
-- 1.2: Select Artist Table
SELECT * FROM Artist;
```

3. Unfortunately, we forgot to add the primary key constraint. Even though the column exists, the database has no idea how to enforce referential integrity without the primary key definition on all tables. There are two methods to add the primary key. Enter both into your file, and run both in sequence.

    a. Altering an Existing Table **(2 points)**

```
-- 1.3a: ALTER the Artist Table to add a primary key
ALTER TABLE Artist
   ADD (CONSTRAINT artist_pk
        PRIMARY KEY (Artist_ID)
       );
```

    b. Dropping and Recreating a Table **(2 points)**

```
-- 1.3b: DROP and re-create the Artist Table to add a primary key
DROP TABLE Artist CASCADE CONSTRAINTS;

CREATE TABLE Artist (
    Artist_ID NUMBER(5,0),
    First_Name VARCHAR2(15) NOT NULL,
    Last_Name VARCHAR2(15) NOT NULL,
    Street VARCHAR2(25) NOT NULL,
    City VARCHAR2(15) NOT NULL,
    State CHAR(2) NOT NULL,
    DateofBirth DATE,
   CONSTRAINT artist_pk
        PRIMARY KEY (Artist_ID)

);
```

4. You also need to add a column to the Artist table that will store the ZIP code. Like before, you may either use an ALTER statement, or drop the table and recreate it. Enter BOTH METHODS into your SQL file and save it. **(2 points)** Include the following headings:

```
-- 1.4a: ALTER Artist Table to Add the ZIP column

-- 1.4b: DROP and ReCREATE the Artist Table with a New Column
```

5. Using a block comment (which is exactly the same as Java `/**/`), explain why you would want to use ALTER instead of DROP and reCREATE. **(3 points)**

```
/* 1.5: Why use ALTER instead of DROP and (re)CREATE?
      <<Type your answer here.>>
*/
```

6. Finally, create an index on the Artist's Last_Name column by typing the following command. Enter the command into your answer file and run it. **(3 points)**

```
-- 1.6: Indexing the Artist's Last Name
CREATE INDEX IDX_ArtistLastName ON Artist(Last_Name);
```

Part 2: Creating the Art Gallery Database (20 Points)

1. Download the Lab9_Key.xlsx file from D2L. I've included a copy in the Content Section for this Lab.

2. In part 1, you created the first table—Artist. Your new task is to finish creating the Art Gallery Database specified in the physical design. You can copy-and-paste most of this, but you must:
    a. Include a `DROP TABLE` statement before each `CREATE` statement (to ensure the commands run in a batch),
    b. Create all tables and correctly specify their attributes' data types and nullability,
    c. Create all primary keys, and
    d. Create all foreign keys.

3. Note that during this process, you may need to reorder your `CREATE` statements to ensure the commands can be run in a batch without errors. (Remember, the first time you run the `CREATE`, the preceding `DROP` will throw an exceptions, but the next time, things should run as expected).

4. Include the following header block before your DROP/CREATE statements:

```
/*********************************************/
/** PART 2: Creating the Art Gallery Database **/
```

Save your file (after testing that it runs as a batch without errors). Submit your file, named LastnameFirstinitial_Lab10.sql, to the Lab 10 Dropbox area on D2L by **Wednesday, April 13, 11:59 pm.**