**CS3431-A22 Wong**

**Assignment 2: SQL 1-4**

Due Date: Su 9/4 at 11:59pm.

Late Policy: 10% off until M 9/5 at 5pm. 0 points afterwards. Maximum grade is 100 points.

Submission: zip your skaa21.sql and skaa22.sql files (name the file Assignment2.zip) and upload them to Canvas using the Assignment 2 heading link.

The homework is to be done individually. You may speak to your classmates or post to Slack about the assignment but you cannot exchange information on the actual SQL code that needs to be written.

You will be extending the art association’s database. The data is located in the spreadsheet CS3431-A22 Assignment2.xlsx. The SQL inserts for the Artwork, NewArt, and TicketPrice tables are provided for you. The create table commands for the Artwork and TicketPrice tables are the same as in Assignment 1 although there is now more data. Tables Artist, Materials, and Gallery have been modified. Three new tables have been added – NewArt, Membership and Building.

**Part 1**

Use a text editor to create **skaa21.sql** that will include the following SQL commands:

1. (1 point) The first commands will delete all of the tables and sequence so you can run your SQL files over and over.
2. (14 points) Write the SQL commands to create the tables and insert the data into the tables following the instructions below. Note that some of the fields and data types have changed from the previous assignment.
   1. For each table, the field name and datatypes are given in the spreadsheet.
   2. The first column of each table is the primary key except for Artwork and NewArt, both of which have the first two fields for their primary key.
   3. The Artwork table has the same structure and constraints as in Assignment 1.
   4. The NewArt table has the same structure and constraints as the Artwork table. Because a different department created and maintains the NewArt table, it is not possible for business organizational reasons, to simply add the NewArt records into the Artwork table.
   5. The TicketPrice table has the same structure, constraints, and data as in Assignment 1.
   6. In the Membership table, the discount rate cannot be 20% or more.
   7. The Artist table now has a new foreign key, memberLevel, that references the new Membership table.
   8. Create a sequence for the primary key in the Materials table. Make sure that the generated keys match those given in the spreadsheet and that your insert statements use the sequence.
   9. The Gallery table now has a new floor attribute. The only floors that can be entered are floors 1 to 5, B for basement, and O for Outdoors. If a building is deleted from the Building table, then galleries in that building will be automatically deleted as well.
   10. There is a new Building table. As a result, the building attribute in the Gallery table is now a foreign key that references the Building table. Remove the empty string building constraint from Assignment 1. Create a named constraint that prevents null values from being entered into the zipcode field.

Create a high-level summary of the database schema so you can see all of the tables and its attributes in one place. You can use PK to indicate a primary key and FK to indicate that a field is a foreign key. For example,

Book(ISBN PK, FirstName, LastName, Title UQ, PubID FK)

**Part 2**

Use a text editor to create **skaa22.sql** that will include the SQL commands below. You may want to build the queries part-by-part and seeing the intermediate results before putting together the entire query. This only problem that will use the NewArt table is Part 2.b! For all other questions, artwork will refer to the data in just the Artwork table. Create a single SQL query for each of the 5 problems listed below. Do not use natural joins.

1. (15 points) Display for each city, the number of artworks in each gallery located in that city; subtotals for each city, and the grand total of all artworks. Only include artworks from the years 2009, 2013, and 2019. Sort by city and then by gallery.
2. (15 points) Display the artist ID, first name, and last name for those artists who had works in 2012 but NOT 2020 (see NewArt table). Sort the results by first name, and then by last name (🡨 this is not a typo!). Hint: use set theory and then a nested query in the FROM clause.
3. (15 points) Display the title, gallery, year, and price of an artwork where the price is over $75 and the medium contains glass. Do NOT use a join to do this problem. Instead use a subquery in the WHERE clause for the Materials data. Sort by the title.
4. (20 points) For just the items that were chosen, determine for each year and its corresponding ticket price:
5. The total price of those items. Name this column TotalArtValue
6. The actual amount that the art association received from the ticket sales. Name this column TicketRevenue
7. The difference between between the two amounts above. Name this column CustomerSurplus.

All dollar amounts are to be formatted with a preceding dollar sign, and commas separating every three digits. For example: $12,948 $327,500 $822. When creating the format, assume that the amounts will always be less than $1 million. Sort the results by year in descending order.

1. (20 points) Display the following information for the artist who has donated the greatest total value of artworks: the first name, last name, and total value of all artwork donated with a heading of MaxDonatedValue.