CSC 355 Database Systems 602T/631
Assignment 4 (4/19)

Due 9:00:00pm, Wednesday 4/26.

Reading: Sections 6.2-6.4 of Ullman/Widom. For next week: Sections 6.6 and 3.1-3.3 of Ullman/Widom.

Once again, your task in this assignment is to write a set of SQL queries (I will supply the tables).

First, download the script file Shows2023.sql from the course web site and run it in SQLDeveloper to construct a database containing four tables that keep track of information on band, the musicians in the bands, and the concert halls where the bands may play shows: BAND, MUSICIAN, HALL, and SHOW.

Inspect the tables and their schemas in SQLDeveloper so that you understand the structure of the database. I recommend that you write down the schema of the database, including all primary keys and foreign keys, before you write any queries.

For each of the following query problems, follow the steps discussed in class: interpret the problem, predict the output by solving it by hand on the needed table(s), write a query to solve the problem, and test the query. (Most of these queries will require the use of joins or subqueries.)

In a separate .sql file (do not modify Shows2023.sql), write a script that contains just eight SQL queries to solve the following problems (in this order):

1. For each band, give the band number and the average age of the musicians in the band. (You may assume that every band has at least one musician in it.) Order the output from the lowest average age to the highest.

2. Give an alphabetical list of the names of all halls where 'Maybe Or Not' has played a show.

3. List the names of all players whose instrument is 'Guitar', along with their band names and ages. Order the players from oldest to youngest.

4. List the names of all halls that have had at least one show since December 1st, 2022.

5. Give the band numbers and names of all bands that have at least three musicians in them (also display how many musicians are each of these bands).

6. For each hall, give the hall ID and the largest payment that has ever made to a band for a show in that hall. (Your output does not have to include halls that have not had any shows in them yet.)

7. For each show, give the show date, the hall name, and the potential income to the hall from that show – the potential income from the show is the capacity of the hall multiplied by the ticket price, minus the payment made to the band. Order the output by the show date, from the most recent show to the earliest show.

8. For each band, give the band ID, the number of shows the band has played, and the total of the payments the band has received from those shows. Order the output from the lowest payment total to the highest payment total. (Your output should include bands that have not played any shows yet. Also, note that the function NVL(*expression*, 0) can be used to replace a NULL *expression* that may appear in the output with a zero instead.)

As before, even if you write and test your queries individually in SQLDeveloper, you should put them all together into a single script file and be sure that they can be run all together in that form to generate the correct output.

Add a comment before each query in your script file to label the queries 1 through 8 (e.g., the comment -- 1 on a line before the first query, the comment -- 2 on a line before the second query, et cetera). Also include a comment at the top of your script file giving your name, the course number and section, the assignment number, and the date of submission, e.g.:

/*
YourName
CSC 355 Section *SectionNumber*
Assignment 4
SubmissionDate, 2023
*/

Submit two files to the Assignment 4 dropbox: (1) the .sql file containing your queries and (2) a .doc or .txt file showing the output when you run your script file. Do not submit Shows2023.sql or include any code from it or output generated by it in your submission – your submitted files should contain only your queries and the requested comments, and the output generated by your queries.

Remarks:

1. It is always your responsibility to make sure that the files you have uploaded are readable and in the correct locations. I recommend that you download your file after submitting it to be sure that is has been uploaded correctly.

2. As is the case for every assignment, all work must be completed individually and without copying, either entirely or in part, from any examples I have posted, anyone else's work, or any automatically generated code. No collaboration between students or sharing of answers between students is permitted. Do not post this assignment to any website in search of answers, and do not consult posted answers on any website while completing the assignment.