Data Management and Visualization

Individual Assignment

Instructor: Dr. Ashish Kumar Jha

Submission Date: November 24, End of day

Start of Assignment : November 18

Instruction

1. There are two parts to assignment. Both parts are mandatory.
2. The submission will be a detailed word document that explains their results. The steps the took to get the results. The reasoning behind the steps and the interpretation of results.
3. Please paste screenshots if required.
4. Please submit only 1 file each in word format. No SQL file needs to be submitted.
5. The ER diagram could be hand-drawn or made in a software of your choice.
6. All submissions have to be made on blackboard
7. All submissions made after deadline but within 3 hrs of deadline with incur 10% penalty for each delayed hour. No submission made after 3 hr delay would be accepted.

Rubrics

Criteria	Weightage
Correctness of Answers	10%
Usage of right commands/structure	20%
Explanation of commands and their reasoning	30%
Interpretation of results	20%
Quality of result presentation and organization in report	20%

Part 1

You are tasked with designing and creating a database for a university. The university has given you broad information about their different offices as described below.

1. Registration Office: The jobs of Registration office is to ensure that students records and personal details are entered in the system The database should have details on StudentID, name, address, phone and others as deemed appropriate.
2. Program office: Each student is registered to a program that can have upto 6 courses. Each student may study different courses. The programs office will maintain a list of courses, list of faculty members teaching the courses, no. of students allowed in the course etc.
3. HR office: HR office is responsible for the record keeping of professional and academic staff in the university. It maintains a record of the staffNo, salary, Course (for faculty member), role for professional staff etc.
4. Complaints Office: This office is responsible for maintaining file on student complaints about staff, facilities, etc. It records Student and the complaint, staff (if complaint against staff), course (if complaint against course) and resolution

Q1. Create an ER diagram that represents the above university in best way possible. State any assumption you make. Try to create an elegant and workable solution. Justify why the database design is the best for the university in a short writeup. *Please note that while you should use creative flexibility to add to the basic information provided by university, you should not create a database too beyond the initial requirements from the university.*

Q.2 Convert your ER diagram to a MYSQL database. Create database and tables as conceptualized in your Model. Justify why the database is a true representation of the ER model described in part 1. Initialize the database with 5 rows of dummy data in each table. Ensure your tables are in 3NF (Third normal form) format.

In the word report, state clearly what you did along with outcome and code used (for Q2).

Part 2

Please download the database from blackboard. The following questions pertain to the database. For each question write the code used and the answer you got as screenshot. If the SQL output is long, you do not need to add screenshot of complete answer. Please attach the screenshot showing top 4-7 lines of output.

1. Use SQL commands to answer the following question
    a. Show the artists with number of albums they have in descending order
    b. Show name and address of customer with highest total sales across the complete invoice table
    c. Find the name of the tracks that occur most frequently in playlist TV Shows and playlist 90's music
    d. Show name of top 10 tracks by number of times they are present in different playlists i.e. a track is number 1 if it is present in maximum number of playlists
    e. Show the countries that the customers belong to with number of customers in each country listed in ascending order
2. Use the database to analyze the relationship between customers, employees, playlists, tracks etc. and find 3 insights that should be of concern to the managers of a music company looking to expand their operations.