

LAB Assignment - 11 & 12

Instructions :

- Make assumptions wherever necessary.
- You are required to attempt all questions
- Your submission will be a singular pdf file
Naming convention: <Roll_No._FirstName_Lab11.pdf>
- Submission Deadline: Nov 17, 2022
- Vivas to be scheduled between: Nov 26, 2022 - Nov 29, 2022
- Total Points = 80

Part I [6x5 = 30]

Create dataset in .csv format in IIT Jodhpur scenario that contains multiple tables.

- Create a table that contains 4 main sections i.e., Academics, Office of Academics, Faculty, Student, Subjects floating in different-different department.
- Create subsections within each main section i.e, a) Academics will contain the name of departments, schools, centers, programs. b) Faculty section will contain detailed information about all faculties including the academics and administrative jobs they are associated with. c) student section will contain all information about all students.
 1. Import into SQL with normalization,
 2. Write a query to retrieve the list of faculty that are associated with the Office of academics, and their department.
 3. Write a query to retrieve the top three subjects in which students are scoring the highest marks and information about faculty members who are teaching those subjects.
 4. Write a query to get top 5 students across all programs like B.tech, M.Tech.
 5. Write a query to get information on how many faculties are taking classes of both B.Tech & M.Tech and how many subjects in total.
 6. Write a query to find the number of students who study in the Electrical department and have taken CSE subjects.

Part II [30+4x5=50]

- Write a script to convert SQL tables into MongoDB documents. Now, execute the same queries as part I on MongoDB dataset.
- Use Map Reduce for the following queries
 - Count the total number of subjects a student has taken.
 - Find the frequency of students who have taken more than 3 subjects.
 - Find the number of faculties who teach more than 1 subject.
 - Calculate the average marks of each student in all subjects that he/she has taken.