******COMSATS University Islamabad (Lahore** **Campus)**

**Lab Assignment 2 FALL 2023**

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| Course Title: | Database Systems I | Course Code: | CSC371 | Credit Hours: | (3+1) |
| Course Instructor: | Khaqan zaheer | Programme Name: | BS Software Engineering | | |
| **Due Date:** | **20-10-23** | **Maximum Marks:** | | **20** | |
| **Important Instructions / Guidelines:** | | | | | |

**Instructions:**

1. You will need access to a database system (e.g., MySQL, PostgreSQL, SQLite) to complete these assignments.
2. Create a new database called "University" for these exercises.
3. Use the following tables for your assignments:

**Table 1: Students**

* Attributes: StudentID (Primary Key), FirstName, LastName, Age, Major

**Table 2: Courses**

* Attributes: CourseID (Primary Key), CourseName, Department, Credits

**Table 3: Enrollments**

* Attributes: EnrollmentID (Primary Key), StudentID (Foreign Key references Students), CourseID (Foreign Key references Courses), EnrollmentDate

**Lab Assignment Questions: Marks 5**

**Question 1: Basic SQL Queries** Write SQL queries for the following tasks:

1.1. Retrieve the first and last names of all students. 1.2. List the course names and their corresponding departments. 1.3. Find the total number of students enrolled in the "Computer Science" department. 1.4. Retrieve the course names and the number of students enrolled in each course.

**Question 2: Data Modification** Write SQL statements for the following tasks: **Marks 5**

2.1. Update the age of the student with StudentID = 101 to 22. 2.2. Delete the enrollment record with EnrollmentID = 201.

**Question 3: Advanced SQL Queries** Write SQL queries for the following tasks: **Marks 5**

3.1. Find the top 5 students with the highest age. 3.2. List all students and their majors, but alias the "Major" column as "Department". 3.3. Retrieve the course with the maximum number of enrolled students. 3.4. Calculate the average age of students in the "Engineering" department.

**Question 4: Additional SQL Query** Write an SQL query for the following task: **Marks 5**

4.1. List all courses in the "Mathematics" department with a course credit greater than or equal to 3.

**Submission:**

* Create a script containing your SQL queries and commands for each question.
* Provide the output of each query/command where applicable.
* Submit your script and the results as a single document.

**Grading:** Your lab assignment will be graded based on the correctness of SQL statements, adherence to instructions, and the accuracy of the results produced by your queries.

**Deadline:** Please submit your completed assignment by [20-10-2023] to your CR email and then CR will zip and email me at address (kzaheer@cuilahore.edu.pk).

**Evaluation:** Your assignment will be evaluated based on the accuracy of the SQL queries, clarity of explanations, proper use of SQL data types, appropriate implementation of table structure changes, and correct application of SQL constraints.

Good luck and happy coding