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

**Lab Assignment <1> 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:** | **10-10-23** | **Maximum Marks:** | | **15** | |
| **Important Instructions / Guidelines:** | | | | | |

**QNo.1: Marks 5**

**Objective:** The objective of this assignment is to reinforce students' understanding of CRUD queries, SQL data types, changes in table structure, and SQL constraints commonly used in database systems.

**Instructions:**

**Question 1:** CRUD Queries

Consider a database schema with the following tables:

Customers (CustomerID, FirstName, LastName, Email, Phone)

Orders (OrderID, CustomerID, ProductID, Quantity, OrderDate)

Products (ProductID, ProductName, Price)

Write SQL queries to perform the following CRUD operations:

**a. Create:** Write an SQL query to insert a new customer into the "Customers" table. Include values for all relevant columns (CustomerID, FirstName, LastName, Email, Phone).

**b. Read:** Write an SQL query to retrieve all orders from the "Orders" table, along with the corresponding customer and product information.

**c. Update:** Write an SQL query to update the quantity of a specific product in the "Products" table.

**d. Delete:** Write an SQL query to delete a customer from the "Customers" table based on their CustomerID.

**Question 2: SQL Constraints Marks 10**

Consider a new database schema with the following table:

Employees (EmployeeID, FirstName, LastName, Email, DepartmentID)

**a. Define the following SQL constraints and explain their purpose:**

NOT NULL

PRIMARY KEY

FOREIGN KEY

UNIQUE

INDEX

DEFAULT

CHECK

**b. Modify the "Employees" table to include appropriate constraints:**

Add a primary key constraint to the "EmployeeID" column.

Add a foreign key constraint to the "DepartmentID" column, referencing the primary key of the "Departments" table.

Add a unique constraint to the "Email" column to ensure that each employee has a unique email address.

**Note:**

Provide the SQL code for all queries and examples.

Use appropriate table and column names based on your preference.

Include brief explanations or comments wherever necessary.

Submit your assignment in a document format, such as PDF or Word.

**Additional Notes:**

You may refer to the course materials, textbooks, or online resources for further understanding and examples.

Ensure that your solutions adhere to the syntax and conventions of the specific DBMS you are using (e.g., MySQL, PostgreSQL, Oracle).

Deadline: Please submit your completed assignment by [17-10-2023] to my email 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