Database Systems (CE/IS/CY 170) Project Two

Introduction Scenario
Imagine you are an entrepreneur starting a new business. To manage your business effectively, you need to create a robust database system. This database will help you organize and maintain records of customers, orders, products, suppliers, and other essential business information. Your goal is to design a comprehensive database that supports various operations, including data entry, updating records, and generating reports. This project will guide you through the steps of creating and managing a database, ensuring it meets the needs of your business while adhering to best practices in database design and management.

Submission Date: 15/08/2025

Important Notice: Copying work will attract zero marks, so think twice before sharing your work with others. This is an individual assignment.

Project Questions

Part 1: Database Design
1. Database Creation:

- What is the name of your business? Create a database using your business name.
  - Question: Provide the SQL statement to create the database.

2. Table Design:

- Design five tables relevant to your business. What are the tables you have created? Provide a brief description of each table.
  - Question: Define the schema for each table including primary keys and foreign keys where applicable. Provide the SQL statements used to create each table.

3. Insert Records:

- Insert at least five records into each table.
  - Question: Provide the SQL statements to insert five records into each table.

Part 2: Database Operations
1. Deleting and Adding Columns:

- Perform operations to delete and add columns in one of the tables.
  - Question: Provide the SQL statements used to delete and add columns.

2. Deleting and Updating Records:

- Perform operations to delete and update records in one of the tables.
  - Question: Provide the SQL statements used to delete and update records.

Part 3: Data Selection and Ordering
1. Select Statements:

- Use select statements for various forms of selection.
  - Question: Write select statements to retrieve specific data from the tables. Provide at least three different select queries.

2. Ordering Data:

- Use ordering by ascending and descending order.
  - Question: Write SQL statements to order data in ascending and descending order based on specific columns.

Part 4: Constraints and Functions
1. Constraints:

- Use at least four constraints in your table definitions (e.g., primary key, foreign key, unique, not null, check).
  - Question: Describe the constraints used in your table definitions and their significance.

2. Functions:

- Use functions such as SUM, AVG, MIN, MAX, DESTINCT, etc.
  - Question: Write SQL statements using aggregate functions to perform calculations on the data. Provide examples using at least three different aggregate functions.

Part 5: Join Operations
- Perform join operations between two or more tables.
  - Question: Write SQL statements to perform inner join, left join, and right join operations between the tables. Provide examples of each type of join.

Part 6: Wildcards and LIKE Statements
- Use LIKE statements with wildcards to filter records based on partial matches (e.g., names starting with "J", emails containing "@gmail.com", etc.).
  - Question: Write SQL statements using LIKE and wildcards to search for specific patterns in your tables. Provide at least three examples using different patterns.

Part 7: Graphical User Interface
- Create a simple graphical user interface for your database system. The interface should allow users to perform actions such as adding, updating, viewing, or deleting records.
- You may use tools such as Microsoft Access, Java (Swing/JavaFX), or any other platform you are comfortable with.
  - Question: Design and briefly describe your GUI. Include screenshots or diagrams where possible. Explain how your GUI interacts with the database (e.g., through SQL queries, backend logic, etc.).