Question: Backend Development
Batch August 2025

Note: *Please ensure that the implementation is done strictly as per the topic allocated to your team. Generalized or similar submissions will not be accepted.*

Design and implement **a complete** Management System Database using MySQL by performing the following tasks: [10 marks]

1) Draw an ER Diagram in *draw.io* showing entities, attributes, and relationships.
   - Identify all major entities, their attributes, and primary keys.
   - Show relationships (1–M, M–N, 1–1) with clear cardinalities.
   - Include associative entities wherever M:N relationships exist.
   - Indicate foreign keys and participation constraints clearly.

2) Create the database schema (DDL) with all required constraints and relationships.
   - Appropriate data types and size definitions.
   - Primary Keys and Foreign Keys for relationships.
   - Unique, Check, and Not Null constraints.
   - Use ENUM or SET data types where suitable (e.g., gender, status).
   - Create indexes on key searchable fields.

3) Perform DML operations (Insert, Update, Delete) to populate sample data.
   - Insert at least 5–10 records in each main table.
   - Update some attribute (e.g., change contact info, modify price, update status).
   - Delete one or more records safely (with `WHERE` condition).

4) Write SQL Queries using Joins, Aggregate functions, Grouping, and Subqueries to retrieve meaningful information.

5) Implement a Trigger, a Function, and a Stored Procedure relevant to your system's logic.

6) Normalize your database up to Third Normal Form (3NF) and provide a short explanation.
   - Identify repeating groups → convert to 1NF.
   - Remove partial dependencies → convert to 2NF.
   - Remove transitive dependencies → convert to 3NF.
   - Clearly show the final normalized tables.
   - Explain each step briefly

----------X-X-X-X-X----------