Assignment -I

Subject: Database Management System

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1. Considering an example, differentiate between data and information. Explain how DBMS overcome the limitation of traditional file processing system.
2. Explain the various level of data abstraction with suitable examples.
3. What do you understand by Data independence? Explain. How schema is different from Instances? Justify with some suitable example
4. Explain DDL, DML and DCL statements.
5. Explain database system architecture with diagram.
6. **Write a short notes on:**
   - Strong entity and weak entity
   - ER model
   - Role of DBA
   - Relational model
   - Primary key and foreign key
   - Database Application architecture (two-tier and three-tier)

Note: After drawing the ER diagram, convert it into a relational schema for all the questions below.

7. Construct and ER diagram for keeping records for exam section of a college.
8. Draw ER diagram for a Library Management System including primary key, strong entity, weak entity, composite attribute, derived attribute and multivalued attribute in your ER diagram.
9. Draw ER diagram for a vehicle Management System including primary key, strong entity, weak entity, composite attribute, derived attribute and multivalued attribute in your ER diagram.
10. Draw an ER diagram for the following scenario.
    A university contains many faculties. The faculties in turn are divided into several colleges. Each college offers numerous programs, and each program contains many courses. Teachers can teach many different courses and even the same course numerous times. Courses can also be taught by many teachers. A student is enrolled in only one program, but a program can contain many students. Students can be enrolled in many courses at the same time and the courses have many students enrolled.
11. Construct ER model of a car insurance company whose customers own one or more cars each. Each car has associated with it zero to any number of recorded accidents. Also design a relational database corresponding to the ER diagram.

12. Suppose you are given the following requirements for a simple database for the employee management system.
    a) An employee may work in upto two departments or may not be assigned to any department.
    b) Each department must have one and may have upto three phone numbers.
    c) Each department can have anywhere between 1 and 30 employees.
    d) Each phone is used by one, and only one, department.
    e) Each phone is assigned to at least one and may be assigned to upto 30 employees.
    f) Each employee is assigned at least one, but no more than 5 phones.
13. Draw a schema diagram for the following schemas that represent the bank database.

branch (branch_name, branch-city, assets)
customer (customer_name, customer_street, customer_city)
account (account_number, branch_name, balance)
loan (loan_number, branch_name, amount)
depositor (customer_name, account_number)
borrower (customer_name, loan_number)