Week 1 Assessment

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Q.1. Differentiate database and DBMS?

Ans: A database is a collection of related data, while a DBMS is software used to manage and access that data easily. DBMS helps in storing, updating, and retrieving data from the database.

Q.2. Differentiate between data and information?

Ans: Data is raw, unprocessed facts, while information is processed data that has meaning. Information helps in decision-making, whereas data alone doesn't provide clear insights.

Q.3. What are the different types of metadata?

Ans: The different types of metadata are descriptive, structural, and administrative metadata.
Descriptive gives details about data, structural shows how data is organized, and administrative helps in managing data.

Q.4. Explain the functions of DBMS.

Ans: 1) Data storage, retrieval, and update
2) User access control and security
3) Backup and recovery
4) Data integrity and consistency
5) Multi-user access and concurrency control
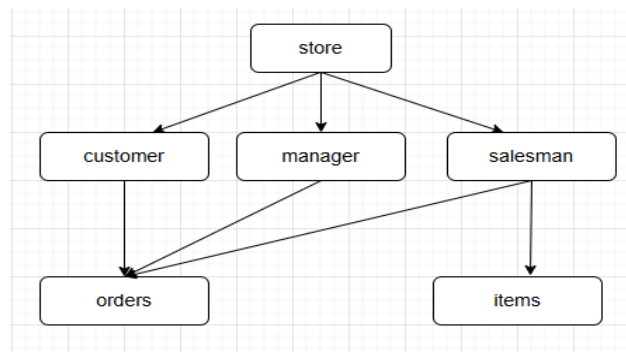
Q.5. Illustrate with diagram on the types of DBMS.

Ans: 1) Relational DBMS – Stores data in tables with rows and columns using SQL.

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Shyam	Computer Science

2) Hierarchical DBMS – Stores data in a tree-like structure with parent-child relationships
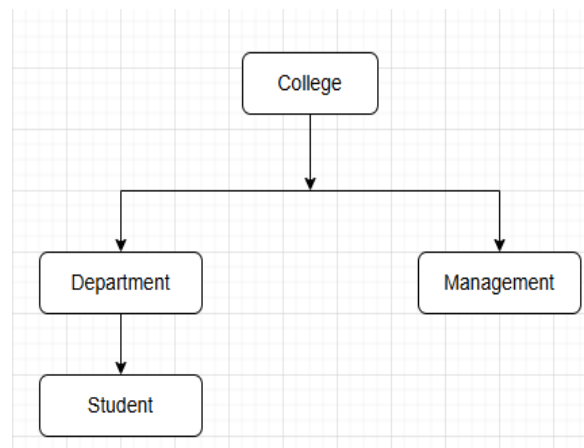
3) Network DBMS – Uses a graph structure allowing many-to-many relationships

Q.6. What is Schema?

Ans: A schema is the overall logical structure of a database that defines how data is organized.
 It acts like a blueprint that shows how different parts of the database are connected.

Q.7. Mention the advantages of using DBMS.

Ans: 1. Easy data access and management

2. Improved data security

3. Reduces data redundancy and inconsistency

4. Allows multi-user access with concurrency control

Q.8. What is an instance?

Ans: An instance is the actual content of the database at a particular time, like a snapshot. It represents the current state of the database, and it keeps changing with user operations.

Q.9. What is Centralized Database architecture?

Ans: Centralized database architecture stores all data in a single location, usually on one central server.
 Users access the database through networked terminals or devices.
 It offers better control and security but may have performance issues with many users.

Q.10. Explain Client/Server Database architecture.

Ans: Client/Server database architecture divides the system into two parts: clients and a central server.
 Clients send requests, and the server processes and responds with the required data.

Q.11. School Database ER diagram (Simple)

Construct an ER diagram to model a database for the given Information. How to draw an Entity Relationship diagram?

Suppose that you are designing a schema to record Information about a school. Your database needs to record the following information:

For each student, their StudentID and Name. A student enrolls in one or more classes.For each class, Its ClassID and ClassName. A class can have multipe students enrolled.
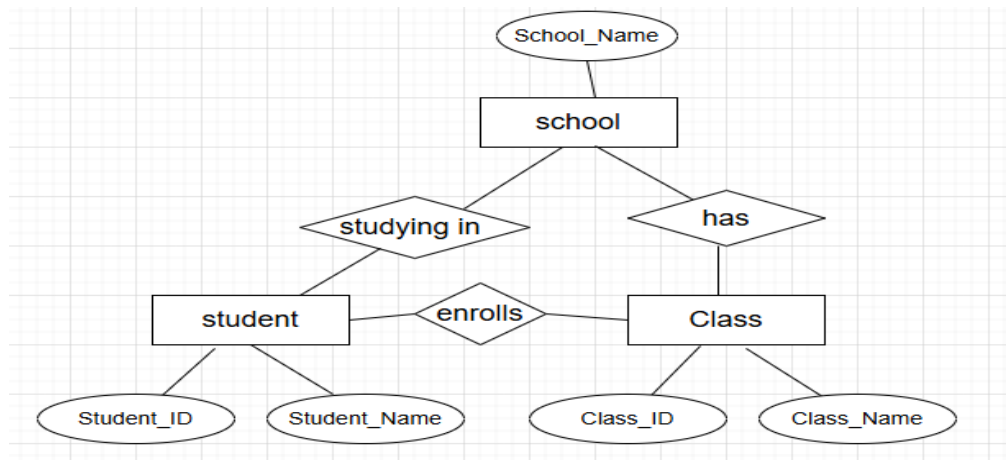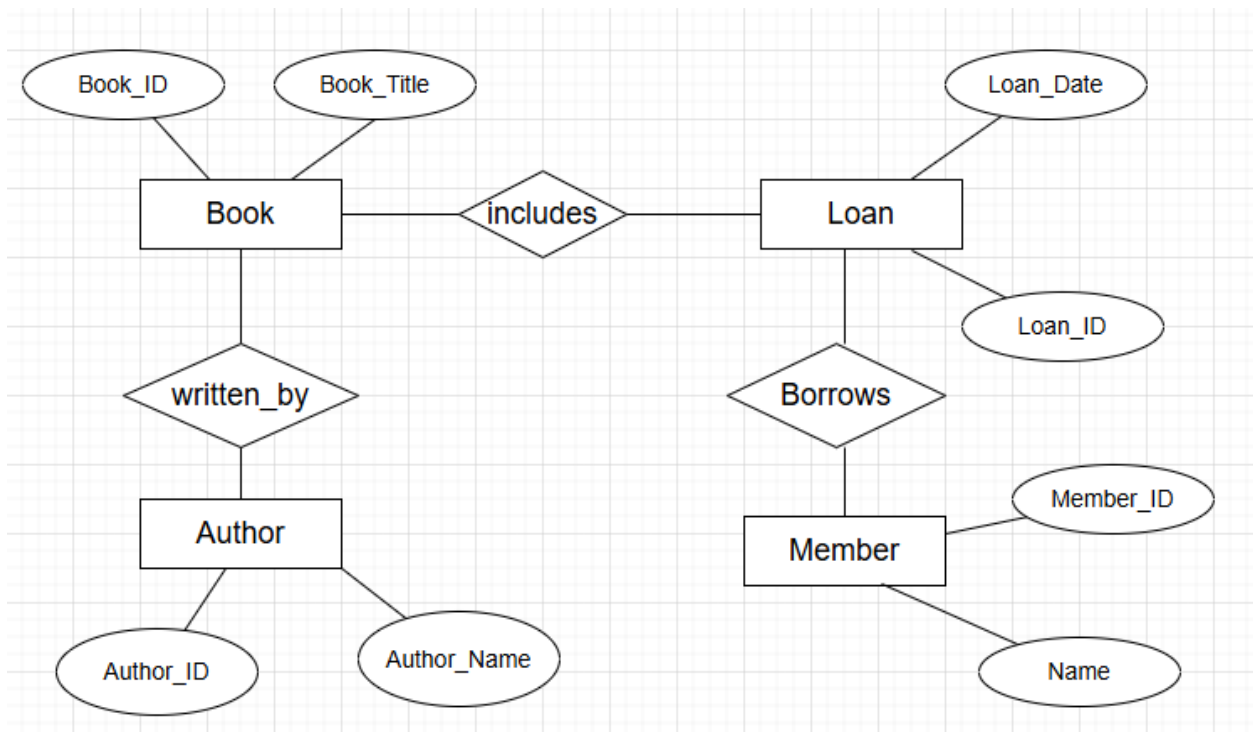

Q.12. Library Management System (Medium)

Suppose that you are designing a schema to record information about a library management system. Your database needs to record the following information:

For each member, their MemberID and Name. A member can borrow multiple books For each book, its BookID and Title. A book can be borrowed by multiple members through loans For each loan, its LoanID and LoanDate.

A loan includes one or more books. For each author, their AuthorID and AuthorName. A book is written by one or more authors.
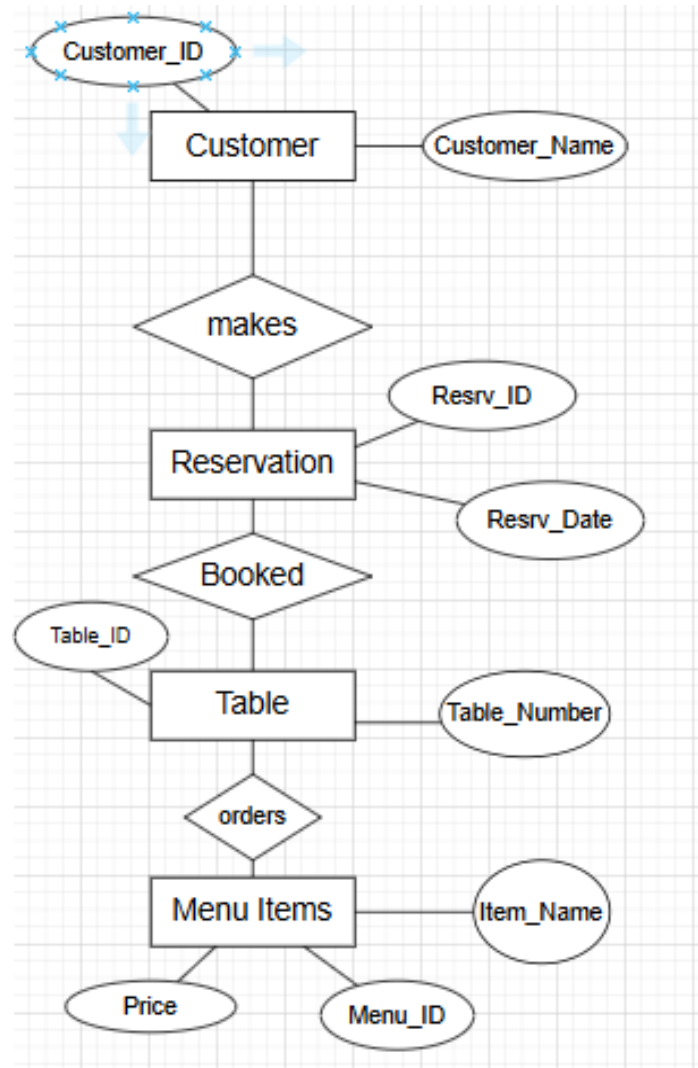
Ans:

Book_ID   Book_Title   Loan_Date

        Book ──── ◇ includes ◇ ──── Loan

                                              Loan_ID

        ◇ written_by ◇   ◇ Borrows ◇

                                                   Member_ID
        Author   Member

Author_ID   Author_Name   Name

Q.13. Restaurant Management system (Medium)

Suppose that you are designing a schema to record information about a restaurant management system. Your database needs to record the following information: For each customer, their CustomerID and Name. A customer can make multiple reservations. For each reservation, its ReservationID and ReservationDate. A reservation Includes one or more tables. For each table, its TableID and TableNumber. A table can be included in multiple reservations. For each menu item, its MenuitemID, ItemName, and Price. A reservation can order multiple menu items.

Ans:

Customer_ID

Customer — Customer_Name

makes

Resrv_ID

Reservation

Resrv_Date

Booked

Table_ID

Table — Table_Number

orders

Menu Items — Item_Name

Price   Menu_ID

Q.14. Hotel Booking System (Medium)

For each guest, their GuestID and Name. A guest can make multiple bookings.

For each booking, its BookingID and BookingDate. A booking includes one or more rooms.

For each room, its RoomID and RoomType. A room can be included in multiple bookings.

For each payment, its PaymentID and PaymentAmount. A booking is paid by one or more payments.

Ans:
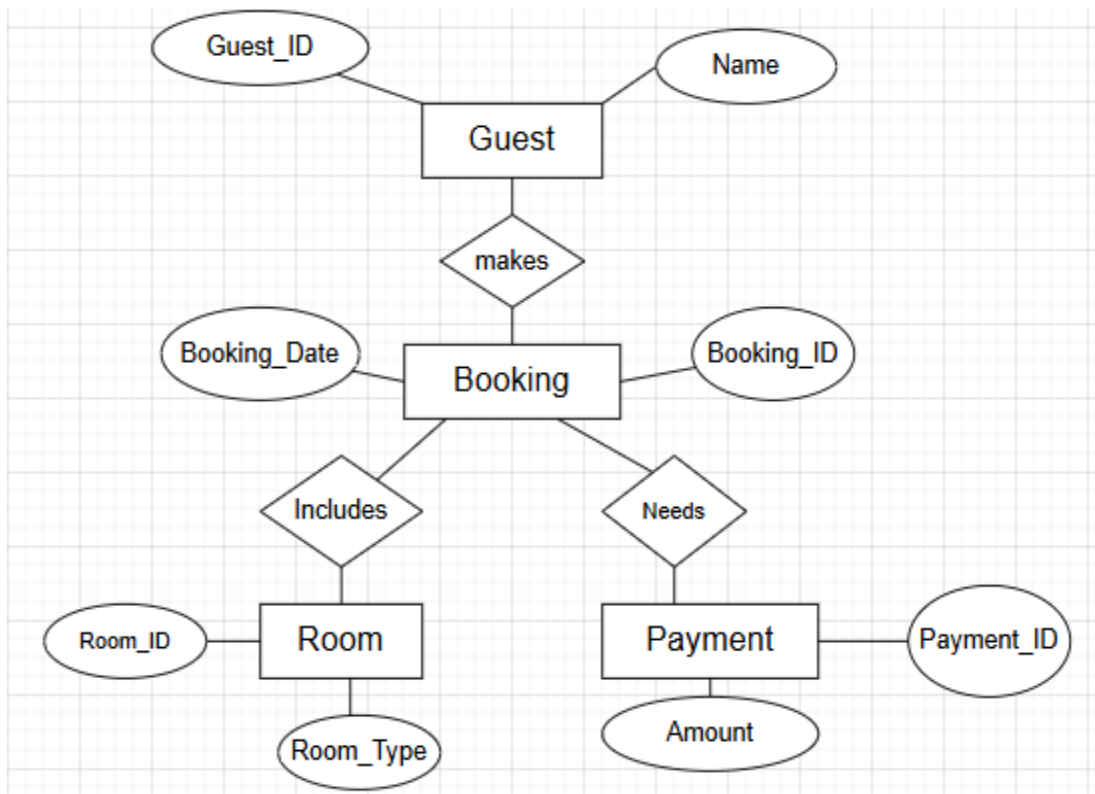
Q.15. Social Media Platform (Complex)

For each user, their UserID, Username, and Email. A user can create multiple posts.For each post, its PostID and PostContent. A post can have multiple comments and likes.

For each comment, its CommentID and CommentContent. A user can comment on multiple posts. For each like, its LikeID. A user can like multiple posts.

For each friendship, its FriendshipID. A user can have friendships with multiple other users.

Ans :