

Assignment - 1

Sec - A

1. What is database?

A database is an organized collection of data that can be easily accessed, managed, and updated electronically.

2. What is a Schema?

A Schema is the logical structure of a database, defining how data is organized and how relationships among data are maintained.

3. List the types of database models.

- Hierarchical model
- Network model
- Relational model
- Object - Oriented model
- Document model
- Key-Value model

4. What is Primary key?

A Primary key is a unique identifier for each record in a table. It ensures that no two rows have the same value in that column.

Sec - B

1. Explain three-level architecture of DBMS.

- Internal level: Deals with Physical Storage of data.
- Conceptual level: Describes structure of the whole database for a community of users.

- External level: User - specific view of the database.

This architecture provides data abstraction and independence between levels.

2. Explain the ER model and its components.

ER (Entity - Relationship) model represents data using entities, attributes, and relationships.

- Entities: Objects (e.g. Student)
- Attributes: Properties (e.g. Name, ID)
- Relationships: Associations between entities (e.g. Enrolls)

It helps in designing a database Schema.

Sec - c

1. What is database language? Explain in detail.

DBMS uses several database languages:

- DDL (Data Definition Language):
Defines Schema (e.g. CREATE, ALTER)
- DML (Data Manipulation Language):
manages data (e.g. INSERT, UPDATE)

- DCL (Data Control Language):
Controls access (e.g.: GRANT, REVOKE)

- TCL (Transaction Control Language):
manages transactions (e.g.: COMMIT, ROLLBACK)

2. What is generalization, specialization, and aggregation? Explain how these are used in ER.

- Generalization: Combining similar entities into a superclass (e.g.: student and Teacher into Person)

- Specialization: Dividing an entity into subclasses (e.g.: Employee into manager and Engineer)

- Aggregation: Relationship between relationships (e.g.: a "WorksOn" relationship between Employee and project can be associated with a manager).