**1. What is normalization?**

* Normalization is the process of **organizing data** to reduce **redundancy** and improve **data integrity**.
* It involves breaking a table into smaller related tables and defining relationships between them.

**2. Explain primary vs foreign key.**

* **Primary Key**: Uniquely identifies each record in a table. Cannot be NULL.
* **Foreign Key**: A field in one table that refers to the **primary key** in another table to create a relationship.

**3. What are constraints?**

* Rules applied to table columns to ensure **data integrity**.
* Examples: NOT NULL, UNIQUE, PRIMARY KEY, FOREIGN KEY, CHECK, DEFAULT.

**4. What is a surrogate key?**

* A surrogate key is a **system-generated unique identifier** used as a substitute for a natural key.

**5. How do you avoid data redundancy?**

* By applying **normalization**, using **foreign keys**, and structuring data into **separate related tables**.

**6. What is ER diagram?**

* ER (Entity-Relationship) diagram is a **visual representation** of database structure showing:

**Entities** (tables)

**Attributes** (columns)

**Relationships** (connections between tables)

**7. What are the types of relationships in DBMS?**

* **One-to-One**
* **One-to-Many**
* **Many-to-One**
* **Many-to-Many**

**8. Explain the purpose of AUTO\_INCREMENT.**

* Used to **automatically generate unique values** for a column (usually PRIMARY KEY) when new records are inserted.

id INT AUTO\_INCREMENT PRIMARY KEY

**9. What is the default storage engine in MySQL?**

* **InnoDB** (supports transactions, foreign keys, and row-level locking).

**10. What is a composite key?**

* A composite key is a **combination of two or more columns** used to uniquely identify a record.