

Interview Questions

1. What is normalization?

Process of organizing data in a database to reduce redundancy and improve integrity by dividing data into related tables and applying rules (normal forms).

2. Explain primary vs foreign key.

- Primary key: Unique identifier for rows in a table (no NULLs).
- Foreign key: A column in one table that refers to a primary key in another table, enforcing referential integrity.

3. What are constraints?

Rules applied to table columns to enforce data integrity (e.g., PRIMARY KEY, FOREIGN KEY, UNIQUE, NOT NULL, CHECK, DEFAULT).

4. What is a surrogate key?

An artificial key (often auto-increment integer) used as primary key instead of a natural/business key.

5. How do you avoid data redundancy?

Use normalization (split into related tables with keys), enforce constraints, and avoid storing the same data in multiple places.

6. What is ER diagram?

Entity-Relationship diagram: a visual representation of entities (tables), attributes, and relationships among them.

7. What are the types of relationships in DBMS?

One-to-One (1:1), One-to-Many (1:N), Many-to-Many (M:N). (M:N implemented via join table.)

8. Explain the purpose of AUTO_INCREMENT.

Automatically generates sequential unique values for a column (commonly used for surrogate primary keys).

9. What is the default storage engine in MySQL?

Historically MyISAM, but modern MySQL defaults to InnoDB (transactional, supports foreign keys). (Depending on version; common default is InnoDB.)

10. What is a composite key

A primary key made of two or more columns combined to uniquely identify a row.