SQL Intermediate Notes – Database Schema & Constraints

Database & Schema

A Database is an organized collection of related data stored electronically. A Schema is the logical blueprint of the database defining tables, columns, relationships, and constraints.

Tables

Tables store data in rows and columns. Each row is a record and each column is an attribute.

Primary Key

A Primary Key uniquely identifies each record in a table. It must be UNIQUE and NOT NULL.

Foreign Key

A Foreign Key creates a relationship between two tables by referencing a Primary Key.

Foreign Key Dependency Rule

A table cannot reference another table using a foreign key unless the referenced table already exists.

Circular Dependency

Occurs when two tables reference each other using foreign keys.

Fixing Circular Dependency

Solved by creating tables first and adding foreign keys later using ALTER TABLE.

ON DELETE SET NULL

When a parent row is deleted, the foreign key in the child row is set to NULL. Child row is preserved.

ON DELETE CASCADE

When a parent row is deleted, all related child rows are automatically deleted.

Interview Takeaways

Primary keys cannot be NULL. SET NULL preserves child rows. CASCADE removes dependent rows.