

Tutorial 1

1. Define: Primary Key and Foreign Key

Primary Key (PK):

- A Primary Key is a column (or set of columns) that uniquely identifies each row in a table. It cannot contain NULL values and must contain unique values. Each table has only one Primary Key.

Foreign Key (FK):

- A Foreign Key is a column that references the Primary Key of another table. It enforces referential integrity and creates relationships between tables.

2. Define: SQL Language

SQL (Structured Query Language) is the standard language used to interact with relational databases.

- SELECT – Retrieve data
- INSERT – Add new data
- UPDATE – Modify existing data
- DELETE – Remove data
- CREATE – Create database objects
- DROP – Delete database objects
- ALTER – Modify structure

3. List 6 Examples of RDBMS

- MySQL
- PostgreSQL
- Oracle Database
- SQLite
- MariaDB
- Microsoft SQL Server

4. List three Main Database Types

- Relational Database – Data stored in tables with a structured schema.
- Time-Series Database – Optimized for time-stamped data (IoT, monitoring, finance).
- NoSQL Database – Non-relational, flexible schema (MongoDB, Redis, Cassandra).

5. What are the main Relationship Types in RDBMS?

- One-to-One (1:1) – One record in Table A relates to one record in Table B.
- One-to-Many (1:N) – One record in Table A relates to multiple records in Table B.

- Many-to-Many (M:N) – Multiple records in Table A relate to multiple records in Table B (using a junction table).

6. What are the Properties of the file system and Database?

1. File System Properties:

- Unstructured data
- No relationships between data
- High redundancy
- No centralized control
- Limited security

2. Database Properties:

- Structured data (tables, rows, columns)
- Relationships between tables
- Reduced redundancy
- Centralized control
- Concurrency control
- Data integrity and security
- Backup and recovery support