1 Given the table

Orders
—-id
—-user_id
—-status
—-created_at

2 Suggest appropriate indexes

- Primary key (id)
- Index on user_id
- Composite index (user_id,created_at)

3 Explain why you chose them

- Primary key(id)
  Id is unique on each order
  Automatically indexed
  Fast lookup and updates

- Index on (user_id)
  Improves performance
  Its common query pattern
  Select * from orders where user_id=?;

Types of Index

1. Primary index
   Created automatically on a **primary key column**.
   Values are **unique** and **not null**.
   Physically organizes the table based on that key.

2. Unique index
   Ensures **no duplicate values** in a column.
   Not necessarily a primary key.

3. Clustered index
   Sorts and stores table rows **physically**
   One clustered index per table
   Data is arranged like **pages in a book**

4. Non clustered index
   Does NOT change the physical table order
   Creates a **separate index table** with pointers

5. Composite index
   Index created on **two or more columns together**

6. Hash index
   Uses **hashing function**
   Very fast for exact match lookups, not for ranges

7. Bitmap index
   Uses **bits (0/1)** to represent values
   Very efficient for columns with **few distinct values**

8. Partial index
   Index created on **specific rows** (not whole table)