Answer the following Questions

1. What is primary key?

A **primary key** is a unique identifier for each record in a database table. It ensures that each entry in the table is distinct and can be uniquely identified by the primary key value. No two rows can have the same primary key value, and it cannot contain NULL values.

Key Characteristics:

1. **Uniqueness**: Each value in the primary key column must be unique across the table, ensuring that no two records are the same.
2. **Non-nullable**: A primary key field cannot contain a NULL value, as it must always have a valid, unique identifier.
3. **Single or Composite**:
   - **Single Primary Key**: A primary key that consists of a single column (attribute).
   - **Composite Primary Key**: A primary key that consists of two or more columns combined to create a unique identifier for each record.
4. **Automatic Indexing**: When a primary key is defined, the database often creates an index on the primary key column(s) to speed up data retrieval.

2. What is Foreign Key and why it is needed

1. **Data Integrity**: Foreign keys ensure that relationships between tables remain consistent, which prevents data anomalies and ensures that data across different tables is synchronized.
2. **Reduces Redundancy**: By using foreign keys to reference data in other tables, databases avoid data redundancy. For example, instead of storing the same customer information in multiple tables, you can store it once and reference it as needed.
3. **Enforces Business Rules**: Foreign keys can be used to enforce business rules, such as ensuring that orders cannot exist without a corresponding customer.
4. **Improves Query Efficiency**: Foreign keys can improve the efficiency of database queries by providing clear relationships between tables, making it easier for the DBMS to optimize queries.