Interview questions:

1. What is SQL, and what are its key components?

- SQL (Structured Query Language) is a programming language designed for managing and manipulating relational databases.
- Key components of SQL include Data Definition Language (DDL), Data Manipulation Language (DML), Data Control Language (DCL), and Transaction Control Language (TCL).

2. Explain the difference between a primary key and a foreign key in a database.

- A primary key is a unique identifier for a record in a table. It ensures that each row in the table can be uniquely identified.
- A foreign key is a field in a table that refers to the primary key of another table. It establishes relationships between tables.

3.What are the different types of joins in SQL, and when would you use each one?

- The different types of joins in SQL are INNER JOIN, LEFT JOIN, RIGHT JOIN, and FULL JOIN.
- Use INNER JOIN to retrieve matching records from both tables.
- Use LEFT JOIN to retrieve all records from the left table and matching records from the right table.
- Use RIGHT JOIN to retrieve all records from the right table and matching records from the left table.

- Use FULL JOIN to retrieve all records from both tables.

4.How do you prevent duplicate records from being inserted into a table?

- You can prevent duplicate records by adding a UNIQUE constraint on one or more columns in the table.
- Alternatively, you can use the INSERT IGNORE or ON DUPLICATE KEY UPDATE statement to handle duplicates during insertion.

5.What is the difference between the WHERE and HAVING clauses in SQL?

- The WHERE clause is used to filter rows before grouping in a query.
- The HAVING clause is used to filter grouped rows after the grouping operation in a query.

1. What are the different types of SQL statements?

There are primarily four types of SQL statements:

- Data Definition Language (DDL): Used to define and manage the structure of database objects, such as tables, views, indexes, and constraints.
- Data Manipulation Language (DML): Used to retrieve, insert, update, and delete data in a database.

- Data Control Language (DCL): Used to control user access and permissions on database objects.
- Transaction Control Language (TCL): Used to manage transactions in a database.

2. What is the purpose of the primary key in a table?

- The primary key is a column or a set of columns that uniquely identifies each record (row) in a table.
- It serves as a unique identifier for each record and ensures the integrity and uniqueness of the data.
- The primary key constraint enforces that the primary key values must be unique and not null.
- It is often used as a reference in relationships with other tables (foreign keys).

3. What are the main components of an SQL statement?

An SQL statement consists of several components:

- SELECT: Specifies the columns or expressions to retrieve from the database.
- FROM: Specifies the table or tables from which to retrieve the data.
- WHERE: Optional clause that filters the data based on specified conditions.
- GROUP BY: Optional clause used to group rows based on one or more columns.
- HAVING: Optional clause used to filter grouped rows based on specified conditions.

- ORDER BY: Optional clause used to sort the result set based on specified columns.
- INSERT: Used to insert data into a table.
- UPDATE: Used to modify data in a table.
- DELETE: Used to delete data from a table.

4. What is SQL, and what is its purpose in database management?

- SQL (Structured Query Language) is a programming language used for managing and manipulating relational databases.
- Its purpose is to provide a standardized way to communicate with and operate on databases.
- SQL allows users to define the structure of databases, create tables, insert, update, and delete data, and retrieve data through queries.

5. What are SQL aggregate functions, and provide examples of their usage.
    - SQL aggregate functions perform calculations on a set of values and return a single result.
    - Examples include AVG, SUM, COUNT, MAX, and MIN.
    - For example: SELECT AVG(salary) FROM employees;