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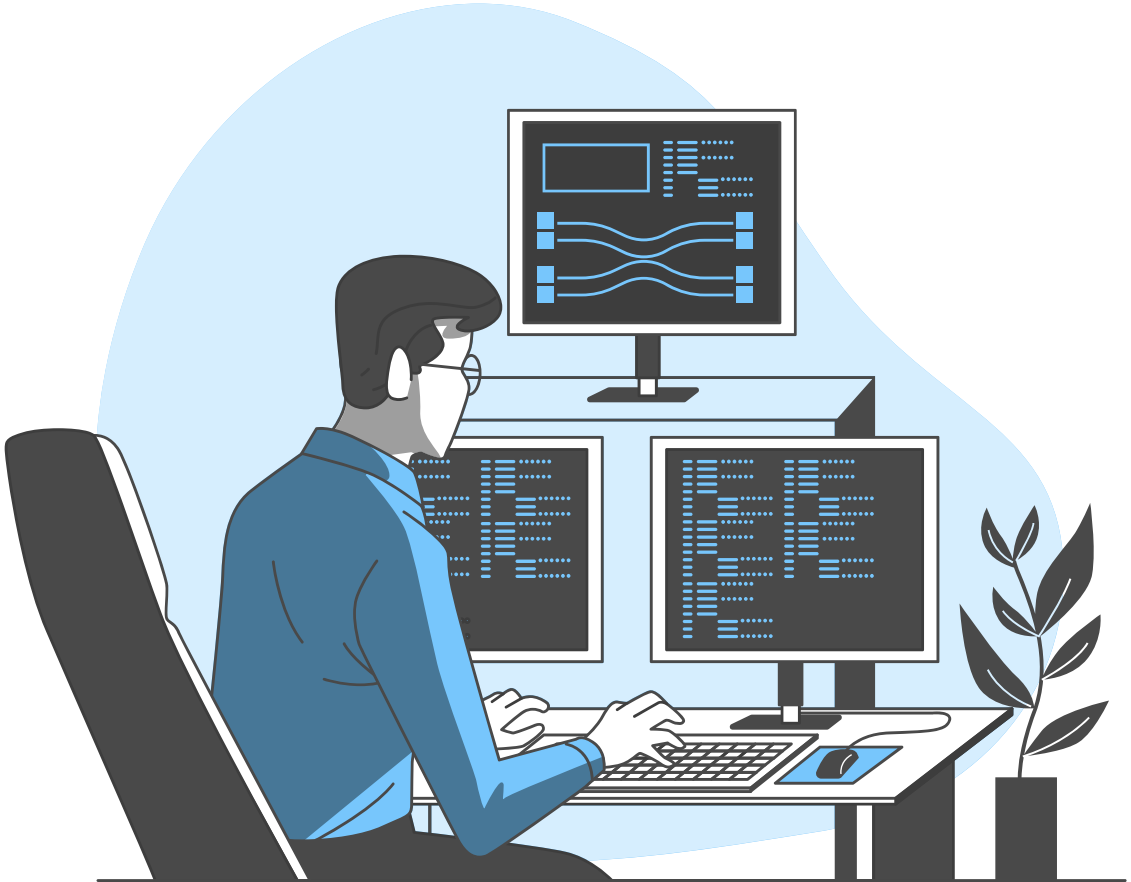

Professional Software Testing & Quality Assurance

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SQL

SQL (Structured Query Language) is a domain-specific language used in programming and managing relational databases. It allows users to define, manipulate, and control data within a relational database management system (RDBMS). SQL is commonly used for tasks such as querying and updating data, creating and modifying database schemas, and controlling access to the data.
Here are some key aspects of SQL:

- **Querying Data**: SQL allows users to retrieve data from a database using SELECT statements. These statements can specify conditions, sorting, and grouping of the retrieved data.
- **Modifying Data**: SQL enables users to insert, update, or delete data in a database using INSERT, UPDATE, and DELETE statements, respectively.
- **Database Schema Definition**: SQL provides commands such as CREATE TABLE, ALTER TABLE, and DROP TABLE to define and modify the structure of database tables, including columns, data types, constraints, and indexes.
- **Data Integrity and Constraints**: SQL allows users to define rules and constraints to maintain data integrity, such as enforcing uniqueness, primary keys, foreign keys, and check constraints.

SQL

- **Transactions**: SQL supports transactions, allowing a group of SQL statements to be treated as a single unit of work, ensuring data consistency and integrity.
- **Data Manipulation Language (DML)**: This part of SQL deals with manipulating data in the database, including SELECT, INSERT, UPDATE, and DELETE statements.
- **Data Definition Language (DDL)**: DDL deals with defining the structure of the database and includes commands like CREATE, ALTER, and DROP.
- **Data Control Language (DCL)**: DCL includes commands like GRANT and REVOKE, which control access to data within the database.

Basic SQL Commands

- **Creating a Table:**

```
CREATE TABLE TableName (
    Column1 DataType1,
    Column2 DataType2,
    ...
);
```

- **Inserting Data:**

```
INSERT INTO TableName (Column1, Column2, ...)
VALUES (Value1, Value2, ...);
```

- **Querying Data:**

```
SELECT Column1, Column2, ...
FROM TableName;
```

- **Filtering Data:**

```
SELECT Column1, Column2, ...
FROM TableName
WHERE Condition;
```

Basic SQL Commands

- **Updating Data:**

```
UPDATE TableName
SET Column = NewValue
WHERE Condition;
```

- **Deleting Data:**

```
DELETE FROM TableName
WHERE Condition;
```

- **Joining Tables:**

```
SELECT Table1.Column, Table2.Column
FROM Table1
JOIN Table2 ON Table1.ForeignKey = Table2.PrimaryKey;
```

- **Ordering Results:**

```
SELECT Column1, Column2, ...
FROM TableName
ORDER BY Column1 ASC/DESC;
```

- **Grouping and Aggregating:**

```
SELECT Column, COUNT(*)
FROM TableName
GROUP BY Column;
```

Common Interview Questions

- **What is SQL ?**

  → SQL (Structured Query Language) is a domain-specific language used in programming and managing relational databases.

- **What is a primary key?**

  → A primary key is a unique identifier for a record in a table. It ensures that each record in a table is unique and not null.

- **What is a foreign key?**

  → A foreign key is a field that refers to the primary key in another table, establishing a relationship between the two tables.

- **What is a UNIQUE constraint?**

  → A UNIQUE constraint ensures that all values in a column are different. This provides uniqueness for the column(s) and helps identify each row uniquely. Unlike primary key, there can be multiple unique constraints defined per table.

- **What is a Join? List its different types.**

  → The sql join clause is used to combine records (rows) from two or more tables in a SQL database based on a related column between the two.

Common Interview Questions

- **What is a Subquery?**

  → A subquery is a query within another query, also known as a nested query or inner query.

- **List the different types of relationships in SQL.**

  → One-to-One - This can be defined as the relationship between two tables where each record in one table is associated with the maximum of one record in the other table.

  → One-to-Many & Many-to-One - This is the most commonly used relationship where a record in a table is associated with multiple records in the other table.

  → Many-to-Many - This is used in cases when multiple instances on both sides are needed for defining a relationship.

  → Self-Referencing Relationships - This is used when a table needs to define a relationship with itself.

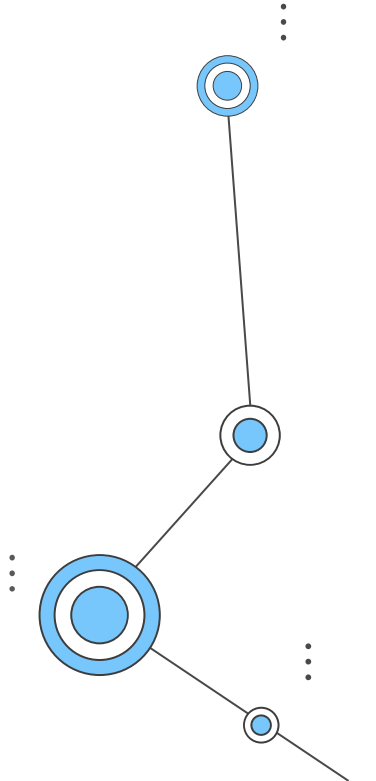
- **What are Aggregate functions?**

  → An aggregate function performs operations on a collection of values to return a single scalar value.

Aggregate functions are often used with the GROUP BY and HAVING clauses of the SELECT statement.

Following are the widely used SQL aggregate functions:

- **AVG()** - Calculates the mean of a collection of values.
- **COUNT()** - Counts the total number of records in a specific table or view.
- **MIN()** - Calculates the minimum of a collection of values.
- **MAX()** - Calculates the maximum of a collection of values.
- **SUM()** - Calculates the sum of a collection of values.
- **FIRST()** - Fetches the first element in a collection of values.
- **LAST()** - Fetches the last element in a collection of values.



Thanks!

Do you have any questions?

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