Automation Testing

- **Introduction to SQL**

A Day in the Life of an Automation Test Engineer

Jake is working for an organization as an Automation Testing Engineer.

He is asked to work on Structured Query Language (SQL) for his project. To start working, he first needs to understand the basics of SQL.

He will learn the importance of using SQL and its applications. He will also learn about Relational databases and basic commands that will help him to get started with SQL.

Learning Objectives

By the end of this lesson, you will be able to:

- Analyze the applications of SQL
- Describe Relational database and its concepts
- Identify the types of logical operators used in SQL

What is SQL?

What is SQL?

The Structured Query Language (SQL) allows users to create complex queries.

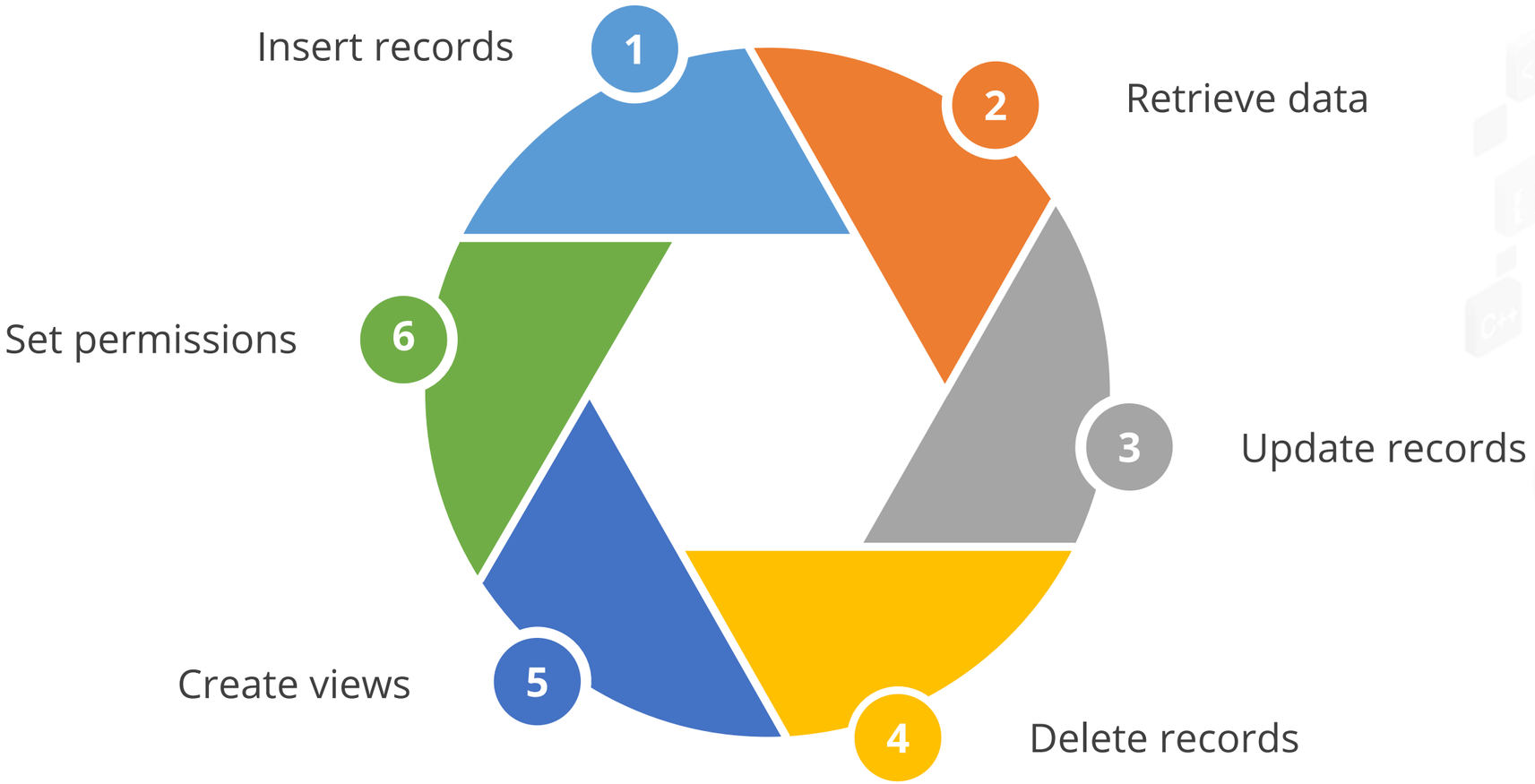
It is a database management system that is used to build, access, and edit databases.

What is SQL?

It is compatible with SQL Server, Oracle, MySQL, and other relational database management systems.

Applications of SQL

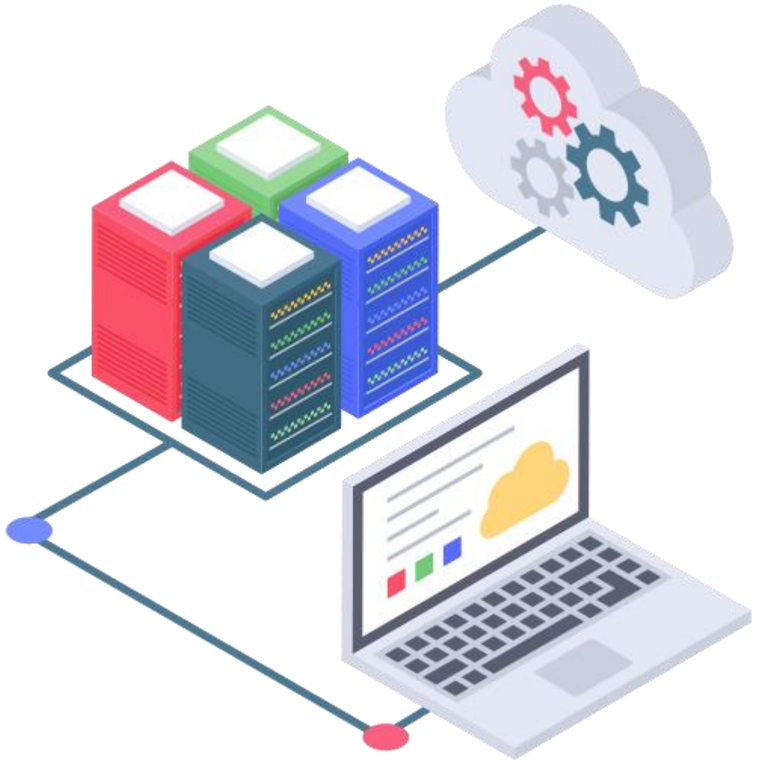
The following are the applications of SQL:



Relational Databases

Relational Databases

A relational database is a collection of datasets that are related to each other.



These datasets are arranged in a table format with columns and rows.

Relational Databases

Each row in the table has a its unique ID called the key.

The attributes of the data are stored in the table's columns.

Benefits of Relational Databases

The following are the benefits of relational databases:

User-friendly

A relational database is more straightforward compared to a network or a hierarchical database.

Structure independent

A relational database is solely focused on data and not the structure.

Benefits of Relational Databases

The following are the benefits of relational databases:

Collaborative

Relational database allows multiple users to access the same database.

Less redundant

Data redundancy is reduced in relational databases. A single user's information is contained in a single entry in the user table.

Benefits of Relational Databases

The following are the benefits of relational databases:

Secure

The relational database does not allow unauthorized users to access the data.

Drawbacks of Relational Databases

The following are the drawbacks of relational databases:

Structural complexity

Relational databases requires a significant amount of planning because they can only store data in tabular form.

High maintenance

The upkeep of a relational database becomes more challenging as the amount of data increases.

Drawbacks of Relational Databases

The following are the drawbacks of relational databases:

Storage

A relational database takes a lot of physical memory as each action depends on separate physical storage.

SQL Querying

SQL Querying

A query is an inquiry for data from a database table or group of tables.

Your First Queries

Your First Queries: SELECT

SELECT is used to select, retrieve, and display the data from a database.

The following is the syntax for the SELECT query:

SQL Query

```
SELECT column1, column2, ...
FROM table_name;
```

Your First Queries: SELECT

The following is the syntax for selecting all the record from a table:

SQL Query

```
SELECT * FROM table_name;
```

Your First Queries: SELECT DISTINCT

SELECT DISTINCT is used select and retrieve only distinct values from a table.

The following is the syntax for the SELECT DISTINCT query:

SQL Query

```
SELECT DISTINCT column1, column2, ...
FROM table_name;
```

Filtering Your Results

Filtering Your Results: WHERE

WHERE is used to filter records that satisfy certain criteria.

The following is the syntax for the WHERE query:

SQL Query

```
SELECT column1, column2, ...
FROM table_name
WHERE condition;
```

Grouping Your Data

Grouping Your Data: ORDER BY

ORDER BY is used to sort the records in ascending or descending order.

The following is the syntax for the ORDER BY query:

SQL Query

```
SELECT column1, column2, ...
FROM table_name
ORDER BY column1, column2, ... ASC|DESC;
```

Grouping Your Data: GROUP BY

GROUP BY is used to group rows that have the same values into summary rows.

The following is the syntax for the GROUP BY query:

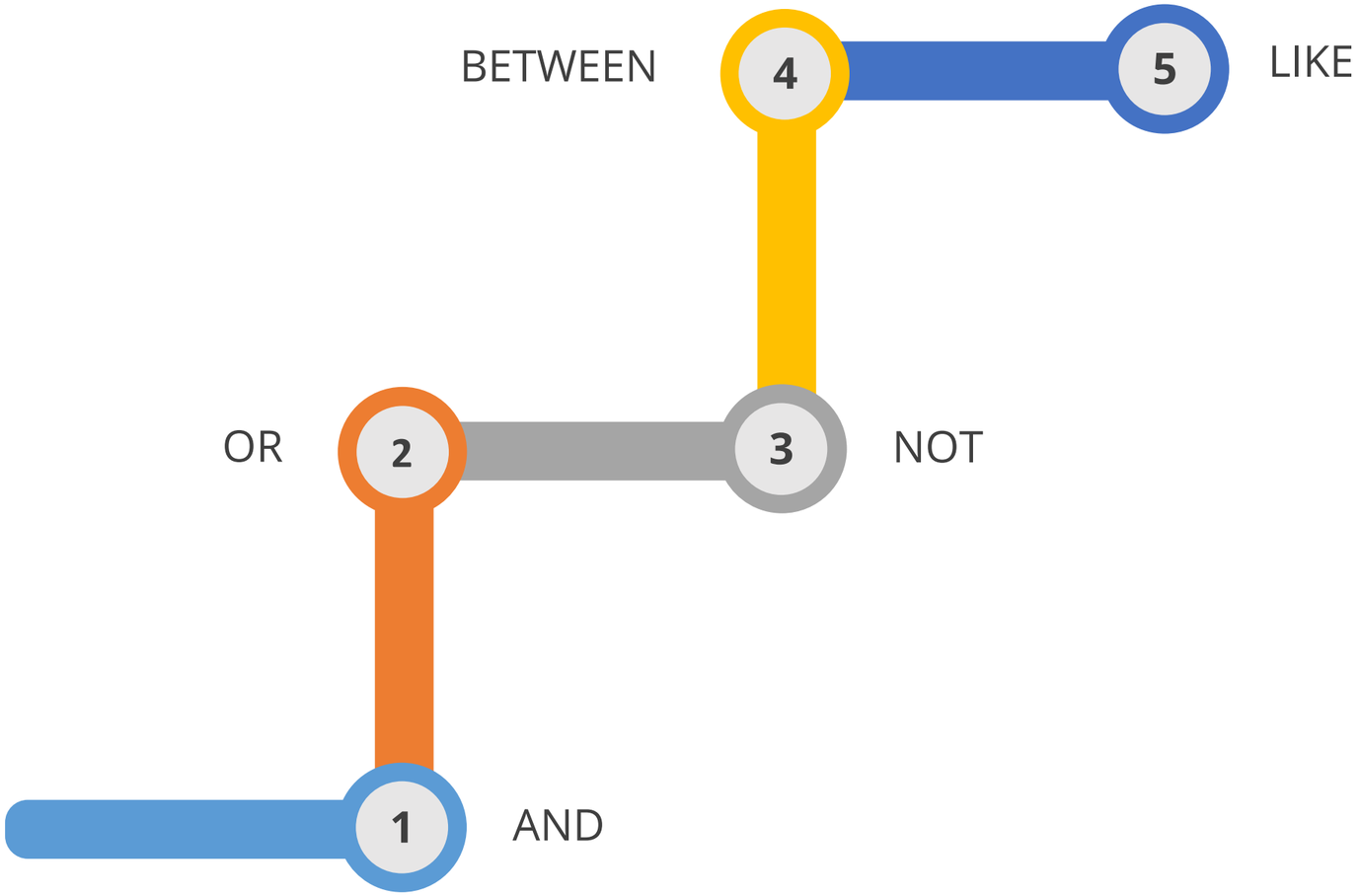
SQL Query

```
SELECT column_name(s)
FROM table_name
WHERE condition
GROUP BY column_name(s)
ORDER BY column_name(s);
```

Logical Operators

Logical Operators

The following are the different types Logical Operators:



Logical Operators: AND

The AND operator displays a record if all the conditions included within the AND operator are satisfied.

The following is the syntax for the AND operator:

SQL Query

```
SELECT column1, column2, ...
FROM table_name
WHERE condition1 AND condition2 AND condition3 ...;
```

Logical Operators: OR

The OR operator displays a record if any of the conditions included within the OR operator are satisfied.

The following is the syntax for the OR operator:

SQL Query

```
SELECT column1, column2, ...
FROM table_name
WHERE condition1 OR condition2 OR condition3 ...;
```

Logical Operators: NOT

The NOT operator displays a record if the condition is not satisfied.

The following is the syntax for the NOT operator:

SQL Query

```
SELECT column1, column2, ...
FROM table_name
WHERE NOT condition;
```

Logical Operators: BETWEEN

The BETWEEN operator is used to filter data within the specified range.

The following is the syntax for the BETWEEN operator:

SQL Query

```
SELECT column_name(s)
FROM table_name
WHERE column_name BETWEEN value1 AND value2;
```

Logical Operators: LIKE

The LIKE operator is used to search for a specified pattern in a column.

The following is the syntax for the LIKE operator:

SQL Query

```
SELECT column1, column2, ...
FROM table_name
WHERE column LIKE pattern;
```

Creating Databases and Tables

Problem Statement:

You are asked to create databases and tables.

ASSISTED PRACTICE

Assisted Practice: Guidelines

Steps to create databases and tables are:

1. Create databases and tables

Key Takeaways

- A relational database is a collection of datasets that are related to each other.
- A query is an inquiry for data from a database table or group of tables.
- ORDER BY query is used to sort the records in ascending or descending order.
- The LIKE operator is used to search for a specified pattern in a column.