Introduction to SQL

- **What is SQL?**
  - **SQL** stands for Structured Query Language. It is used for accessing and manipulating the data.
  - SQL uses CRUD operations to communicate with the databases. CRUD stands for Create, Read, Update and Delete procedures.
  - Here is a breakdown of CRUD operations -
    - CREATE procedures: Performs the INSERT statement to create a new record.
    - READ procedures: Reads the records of the table
    - UPDATE procedures: Executes an UPDATE statement on the table based on the specified primary key for a record within the WHERE clause of the statement.
    - DELETE procedures: Deletes a specified row in the WHERE clause.

- **What is RDBMS?**

RDBMS stands for **Relational Database Management System**. It is the basis for SQL, and for all modern database systems Ex- MS SQL, MySQL, etc.

Tables are the database objects that are used in RDBMS. Table is a collection of related data entries and it consists of numerous columns and rows.

Table is the simplest form of data storage in a Relational Database. Below is an example of table named Ninjas which contains attributes ID, Ninja's Name and City-

ID	Ninja's Name	City
101	Lokesh Ninja	Kolkata
102	Kuldeep Ninja	Bhopal
103	Ojasv Ninja	Shimla

In this course we will be using an open-source RDBMS i.e MySQL. This database uses Structured Query Language for all CRUD operations and other procedures.

MySQL uses the Client-Server model. In this model a "client" is a front-end application that uses the services provided by a MySQL server. And this whole use of the services takes place through SQL Queries.

Difference between MySQL and SQL :

SQL	MySQL
SQL is a Structured Query Language. It is useful to manage relational databases.	MySQL is an RDBMS to store, retrieve, modify and administrate a database using SQL.
SQL is a query **language**.	MYSQL is used as an **RDBMS** database.
To query and operate database systems.	Allows data handling, storing, modifying, deleting in a tabular format.

- **COMMENTS IN MySQL –**

There are 3 ways to add comments in MySQL.

- From # character, till the end of the line.
  Syntax -
  # this is a single-line comment.
- From - - (*double-dash without space*) till the end of line.
  Syntax -
  —This is a comment.
- Can add up multiple lines of comments using this starting and ending syntax.
  Syntax -
  /* This is multiple line of comment. */

- **Example: Banking System -**

Understanding basic MySQL database using Banking System with help of ER Model.
Note:- ER Model :

1. Entity - Real world object (Can be understand as a tables)
2. Attributes - These are the properties of the entity.

In our Banking system we will be considering below mentioned entities:

1. Customer
2. Account
3. Branches
4. Loan
5. Loan type(Loan_type)
6. Transactions
7. Cards

Customer entity and with attributes(column):-

customer_id	branch_id	first_name	last_name	Gender	D.O.B

In this above customer entity we have used branch_id as the attribute that we can use to set up a relationship with Branch entity. Similarly, in the given ER Model below we can understand the different relationships that exist between different entities.