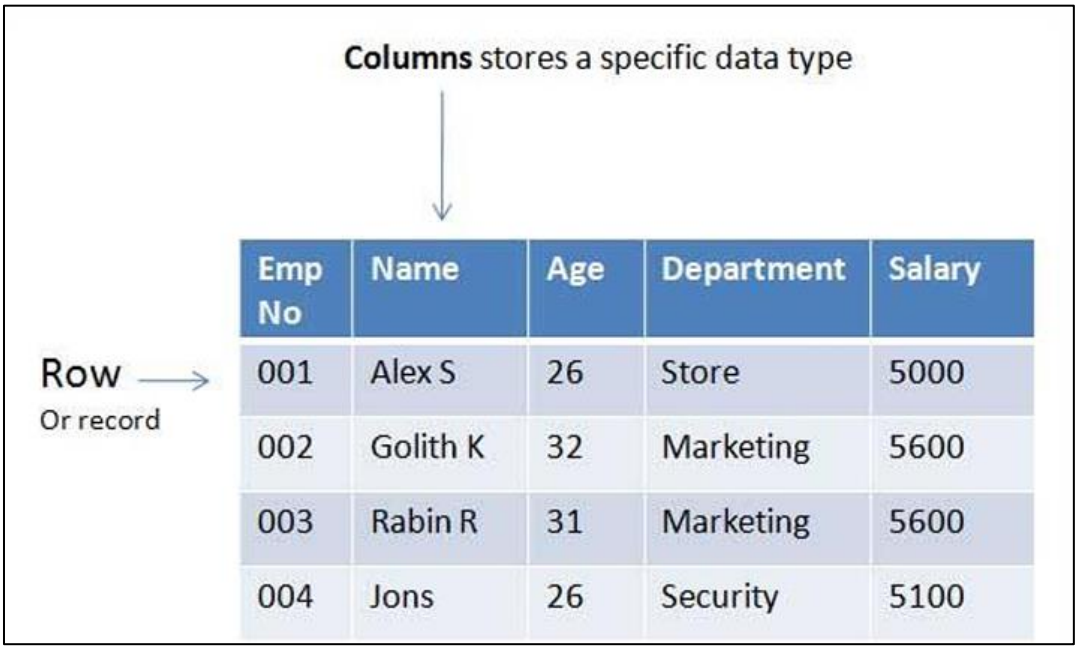
Database: A database is an organized collection of data, so that it can be easily accessed and managed. Data can be organized into tables, rows, columns, and index it to make it easier to find relevant information. The main purpose of the database is to operate a large amount of information by storing, retrieving, and managing data.

File vs Database: A database is generally used for storing related, structured data, with well-defined data formats, in an efficient manner for insert, update and/or retrieval (depending on application). On the other hand, a file system is a more unstructured data store for storing arbitrary data. The file system is more general, and databases are built on top of the general data storage services provided by file systems.

Structured Query Language: SQL is a standard language for accessing and manipulating databases. SQL or Structured Query Language is used to operate on the data stored in a database. Although SQL is an ANSI/ISO standard, there are different versions of the SQL language. However, to be compliant with the ANSI standard, they all support at least the major commands (such as SELECT, UPDATE, DELETE, INSERT, WHERE) in a similar manner.

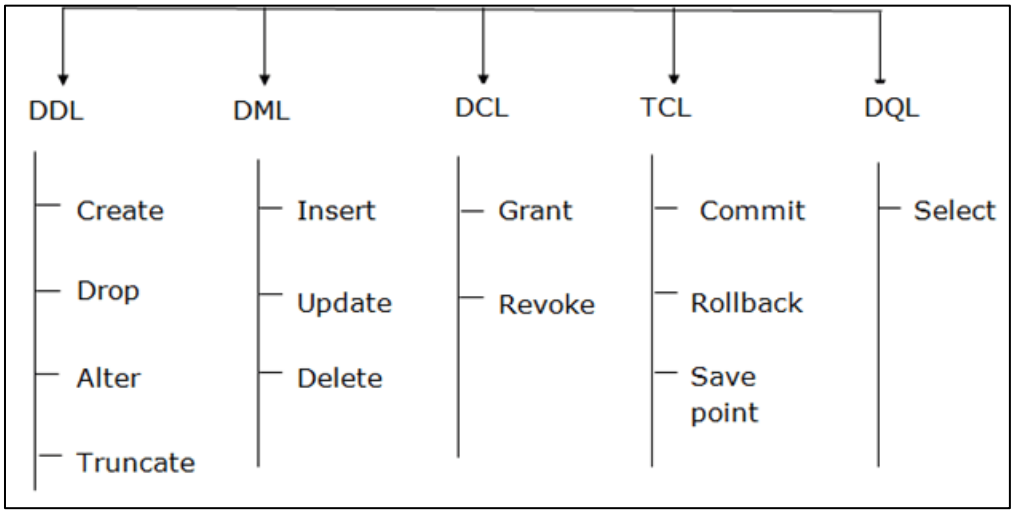
RDBMS stands for Relational Database Management System. RDBMS is the basis for SQL, and for all modern database systems. The data in RDBMS is stored in database objects called tables. A table is a collection of related data entries and it consists of columns and rows. Every table is broken up into smaller entities called fields. A field is a column in a table that is designed to maintain specific information about every record in the table. A record, also called a row, is each individual entry that exists in a table.



Query: A database query is a way of requesting information from the database. A database query can be either a select query or an action query. A select query is a query for retrieving data, while an action query requests additional actions to be performed on the data, like deletion, insertion, and updating.

Categories of SQL Commands: SQL commands are mainly categorized into five categories:

- DDL – Data Definition Language
- DQL – Data Query Language
- DML – Data Manipulation Language
- DCL – Data Control Language
- TCL – Transaction Control Language



Important Queries:

- **CREATE DATABASE**: CREATE DATABASE creates a new database

```
CREATE DATABASE database_name;
CREATE DATABASE myDB;
```

- **CREATE TABLE**: CREATE TABLE creates a new table inside a database.

```
CREATE TABLE table_name
(
      column_name1 data_type,
      column_name2 data_type,
      … … … … … …
);
CREATE TABLE customers (customer_id int, name varchar(255), age int);
```

- **INSERT INTO**: INSERT INTO is used to insert new record in a table.

```
INSERT INTO table_name (column_name1, column_name2, …) values (value1, value2, …);
```

```
INSERT INTO customers (customer_id, name, age) values (1, 'Bob',
55);
INSERT INTO customers (customer_id, name) values (2, 'Rob');
INSERT INTO table_name values (value1, value2, …);
INSERT INTO customers values (3, 'Bob', 54);
```

- **SELECT**: SELECT is probably the most commonly-used SQL statement. One can use it pretty much every time to query data with SQL. It allows to define what data one wants the query to return.
    - **SELECT * from table_name;**
      ```
      SELECT * FROM customers;
      ```
    - **SELECT column_name(s) from table_name;**
      ```
      SELECT name FROM customers;
      ```
    - **SELECT DISTINCT column_name(s) from table_name;**
      ```
      SELECT DISTINCT name FROM customers;
      ```
    - **SELECT TOP number|percent column_name(s) from table_name;**
      ```
      SELECT TOP 2 * FROM customers;
      ```
    - **SELECT column_name(s) from table_name WHERE column_name operator value**
      ```
      SELECT name FROM customers WHERE age = 55;
      ```
- **UPDATE:** The UPDATE statement is used to update data in a table.
  ```
  UPDATE customers SET age = 56 WHERE name = 'Bob';
  UPDATE customers SET age = 51 WHERE name = 'Rob';
  ```
- **DELETE**: DELETE can remove all rows from a table, or can be used as part of a WHERE clause to delete rows that meet a specific condition.
  ```
  DELETE from table_name where some_column = some_value;
  DELETE FROM customers WHERE name = 'Bob';
  DELETE from table_name;
  DELETE from customers;
  ```
- **DROP TABLE**: DROP TABLE deletes a table as well as the data within it.
  ```
  DROP TABLE customers;
  ```