**SQL Database**

Let’s Start:

* MySQL is a database system used on the web
* MySQL is a database system that runs on a server
* MySQL is ideal for both small and large applications
* MySQL is very fast, reliable, and easy to use
* MySQL uses standard SQL
* MySQL compiles on a number of platforms
* MySQL is free to download and use
* MySQL is developed, distributed, and supported by Oracle Corporation
* MySQL is named after co-founder Monty Wideness’s daughter: My

The data in a MySQL database are stored in tables.

A table is a collection of related data, and it consists of columns and rows.

SQL vs MYSQL:

SQL: It is a structured query programming language that manages the relational database management system

MYSQL: It is a relational database management system that uses SQL.

A query is a question or a request.

Query: Database Code.

***Database***:

**CREATE DATABASE *databasename*;**

**DROP DATABASE *databasename*;**

***Table***:

* **CREATE TABLE table\_name (  
      column1 datatype,  
      column2 datatype,  
      column3 datatype,  
     ....  
  );**
* **DROP TABLE table\_name;**
* **TRUNCATE TABLE table\_name;**

CREATE TABLE Persons (  
    PersonID int,  
    LastName varchar(255),  
    FirstName varchar(255),  
    Address varchar(255),  
    City varchar(255)  
);

***Data Types***:

* **VARCHAR(size)**
* **TEXT(size)**
* **BOOL**
* **INT(*size*)**
* **INTEGER(*size*)**
* **FLOAT(*size*, *d*)**
* **DATE**

***Constraints:***

**CREATE TABLE *table\_name*(  
*column1 datatype* *constraint*,  
*column2 datatype* *constraint*,  
*column3 datatype* *constraint*,  
    ....  
);**

* **Not Null:**
  + **ID int NOT NULL,**
* **UNIQUE:**
  + **ID int NOT NULL UNIQUE,**
* **Primary Key:**
  + **ID int NOT NULL PRIMARY KEY,**
  + **CONSTRAINT PK\_Person PRIMARY KEY (ID)**
* **FOREIGN KEY:**
  + **FOREIGN KEY (PersonID) REFERENCES Persons(PersonID)**
* **Check:**
  + **Age int CHECK (Age>=18)**
  + **CONSTRAINT CHK\_Person CHECK (Age>=18 AND City='Sandnes')**
* **DEFAULT:**
  + **City varchar(255) DEFAULT 'Sandnes'**
  + **OrderDate date DEFAULT GETDATE()**
* **AUTO INCREMENT:**
  + **Personid int NOT NULL AUTO\_INCREMENT,**

CREATE TABLE posts (

id int(10) ,

post TEXT NOT NULL,

user\_id int(10),

CONSTRAINT pk\_posts PRIMARY KEY(id),

CONSTRAINT fk\_post\_user FOREIGN KEY (user\_id) REFERENCES users(id)

***Alter Table:***

* **ALTER TABLE *table\_name*  
  ADD *column\_name datatype*;**
  + **ALTER TABLE Customers  
    ADD Email varchar(255);**
* **ALTER TABLE *table\_name*  
  DROP COLUMN *column\_name*;**
  + **ALTER TABLE Customers  
    DROP COLUMN Email;**
* **ALTER TABLE table\_name**

**RENAME TO new\_table\_name;**

* + **ALTER TABLE Student RENAME TO Student\_Details;**
* **ALTER TABLE table\_name  
  RENAME COLUMN old\_name to new\_name;**
  + **ALTER TABLE Student RENAME Column name TO FIRST\_NAME;**

***Insert Into Table***:

* **INSERT INTO *table\_name* (*column1*,*column2*,*column3*, ...)  
  VALUES (*value1*,*value2*,*value3*, ...);**
* **INSERT INTO *table\_name*  
  VALUES (*value1*,*value2*,*value3*, ...);**
  + **INSERT INTO Customers (CustomerName, City, Country)  
    VALUES ('Cardinal', 'Stavanger', 'Norway');**

***Update Statement:***

* **UPDATE *table\_name*  
  SET *column1*=*value1*,*column2*=*value2*, ...  
  WHERE *condition*;**
  + **UPDATE Customers  
    SET ContactName = 'Alfred Schmidt', City= 'Frankfurt'  
    WHERE CustomerID = 1;**
  + **UPDATE Customers  
    SET ContactName='Juan'  
    WHERE Country='Mexico';**
  + **UPDATE Customers****SET ContactName='Juan';**

***Delete Statement:***

* **DELETE FROM table\_name WHERE condition;**
  + **DELETE FROM Customers WHERE CustomerName='Alfreds Futterkiste';**
* **DELETE FROM *table\_name*;**
  + **DELETE FROM Customers;**

***Drop Table:***

* **DROP TABLE Customers;**

***Select Data From Database:***

* SELECT column1, column2, ...  
  FROM table\_name;
  + SELECT CustomerName, City FROM Customers;
* SELECT \* FROM Customers;
  + return all columns

***DISTINCT***:

* SELECT DISTINCT column1, column2, ...  
  FROM table\_name;
  + SELECT DISTINCT Country FROM Customers;
  + SELECT Country FROM Customers;

***WHERE Clause:*** used to ***filter*** records

* SELECT column1, column2, ...  
  FROM table\_name  
  WHERE condition;
  + SELECT \* FROM Customers  
    WHERE Country='Mexico';
  + SELECT \* FROM Customers  
    WHERE CustomerID=1;
  + SELECT \* FROM Customers  
    WHERE CustomerID > 80;

A screenshot of a computer

Description automatically generatedOperators that can be used in the where clause:

Ex)

Between:

* SELECT column\_name(s)  
  FROM table\_name  
  WHERE column\_name BETWEEN value1 AND value2;
  + SELECT \* FROM Products  
    WHERE Price BETWEEN 10 AND 20;
  + SELECT \* FROM Products  
    WHERE Price NOT BETWEEN 10 AND 20

IN:

* SELECT column\_name(s)  
  FROM table\_name  
  WHERE column\_name IN (value1, value2, ...);
  + SELECT \* FROM Customers  
    WHERE Country IN ('Germany', 'France', 'UK');
  + SELECT \* FROM Customers  
    WHERE Country NOT IN ('Germany', 'France', 'UK');

AND:

* SELECT column1, column2, ...  
  FROM table\_name  
  WHERE condition1 AND condition2 AND condition3 ...;
  + SELECT \* FROM Customers  
    WHERE Country = 'Germany'  
    AND City = 'Berlin'  
    AND PostalCode > 12000;

OR:

* SELECT column1, column2, ...  
  FROM table\_name  
  WHERE condition1 OR condition2 OR condition3 ...;
  + SELECT \*  
    FROM Customers  
    WHERE Country = 'Germany' OR Country = 'Spain';

NOT

* SELECT column1, column2, ...  
  FROM table\_name  
  WHERE NOT condition;
  + SELECT \* FROM Customers  
    WHERE NOT Country = 'Spain';

LIKE:

* SELECT column1, column2, ...  
  FROM table\_name  
  WHERE columnN LIKE pattern;
* The ***percent sign*** % represents ***zero***, ***one***, or ***multiple*** characters
* The ***underscore sign*** \_ represents ***one***, ***single*** character
  + SELECT \* FROM Customers  
    WHERE CustomerName LIKE 'a%';
  + SELECT \* FROM Customers  
    WHERE city LIKE 'L\_nd\_\_';
  + SELECT \* FROM Customers  
    WHERE city LIKE '%L%';
  + SELECT \* FROM Customers  
    WHERE CustomerName LIKE 'La%';
  + SELECT \* FROM Customers  
    WHERE CustomerName LIKE '%a';
  + SELECT \* FROM Customers  
    WHERE CustomerName LIKE 'b%s';
  + SELECT \* FROM Customers  
    WHERE CustomerName LIKE '%or%';
  + SELECT \* FROM Customers  
    WHERE CustomerName LIKE 'a%' OR CustomerName LIKE 'b%';

here