Install a database engine and SQL Syntax

As we can see there are numerous database tools that have been used widely and few had became popular now a days:

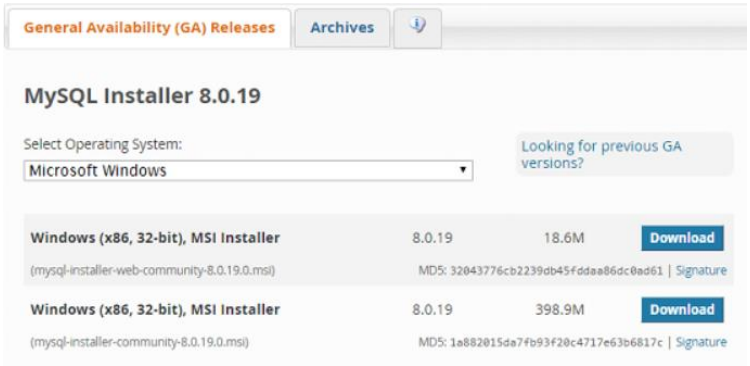
Let us discuss one of the popular one and learn how to install :

1. **MySQL :** As we can see database is playing a major role in internet and web technologies. MySQL is one of the database tools that has widely used by the developers .We can also define the MySQL as the relational database management system which is an open source available.

The main applications includes e-commerce application, hospital management system and hotel booking system and many more.
It allows us to write the sql queries which is used to create the database, create tables ,modify tables and many more options which makes the user for ease to work with the databases.

Now we can see the installation steps with some model screenshots :

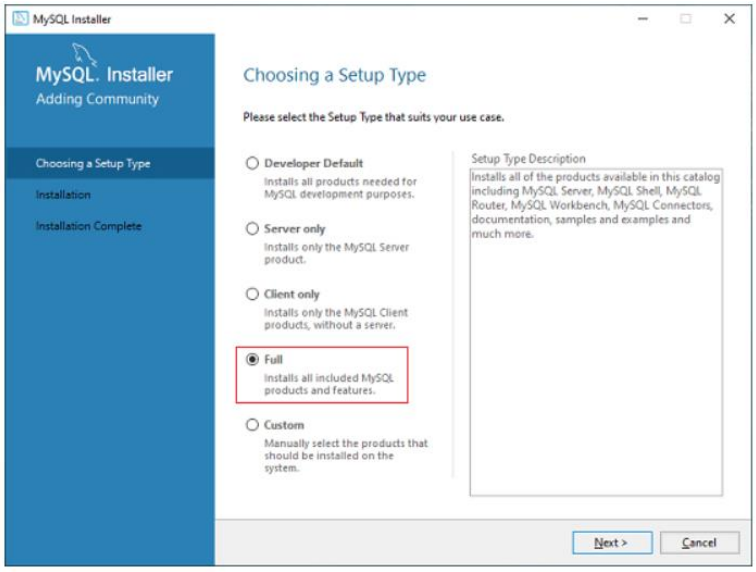
1. Visit the Mysql official website and go to downloads and select the operating system



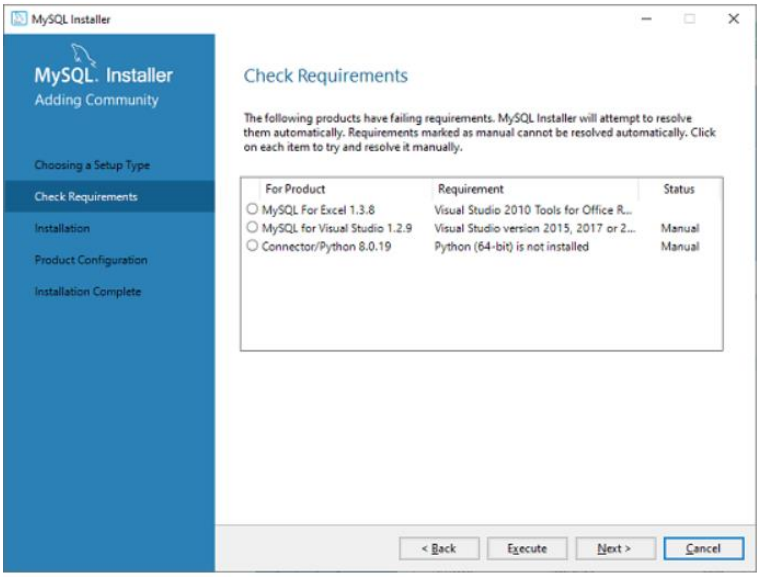
2. **Once after downloading click on .exe file and start installation process:**

3. **Once the MySQL screen opens there will be different options to select a setup-type**

   Select the option as 'FULL' to download all the included features and products of MySQL



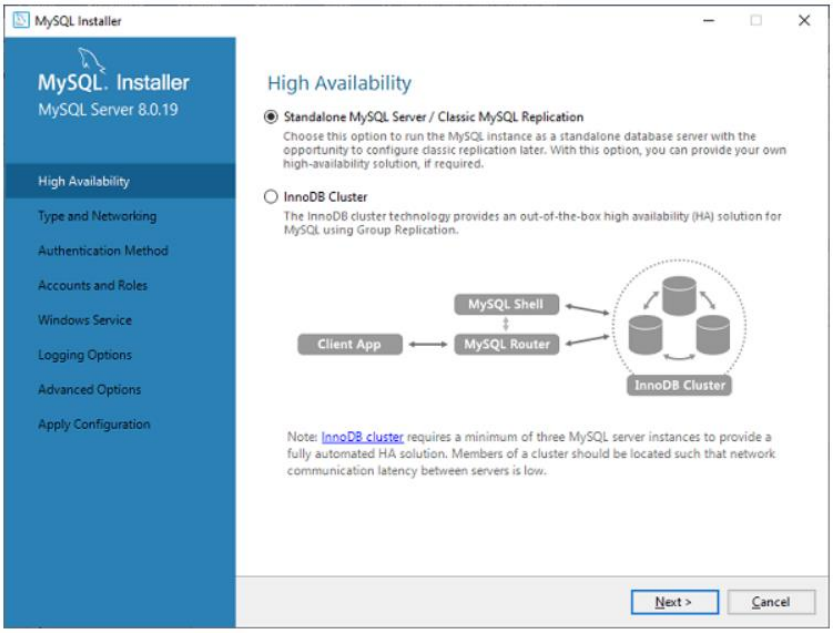
4. **Next step is to install the requirements by clicking on the 'execute' option :**



5. **Install all the required products and features**

6. **Once all the products have been installed successfully go to product configuration**

7. **Once high availability option opens choose the option according to your needs.**



8. **In the networking option choose connection type as tcp/ip and default port number is 3306**

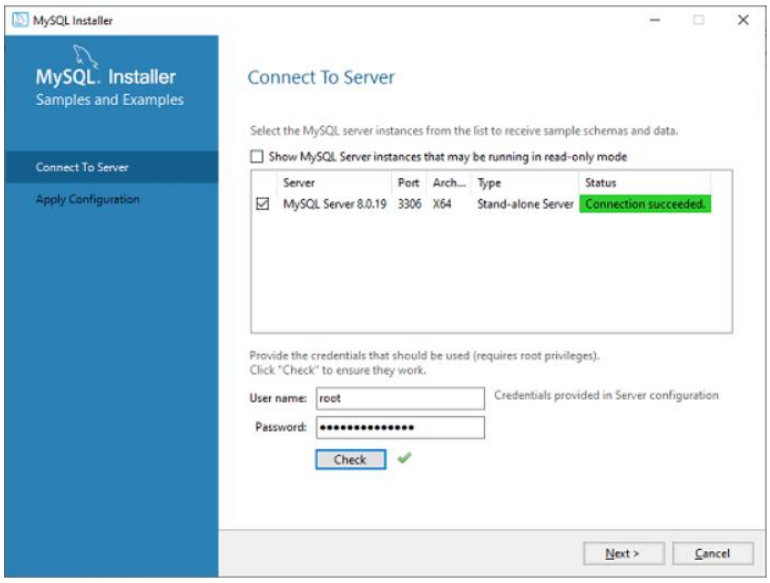
9. **After clicking Next choose the authentication method**

10. **Create the strong password for the account which will be the root password**

11. **Click Next on the windows service option to start the server.**

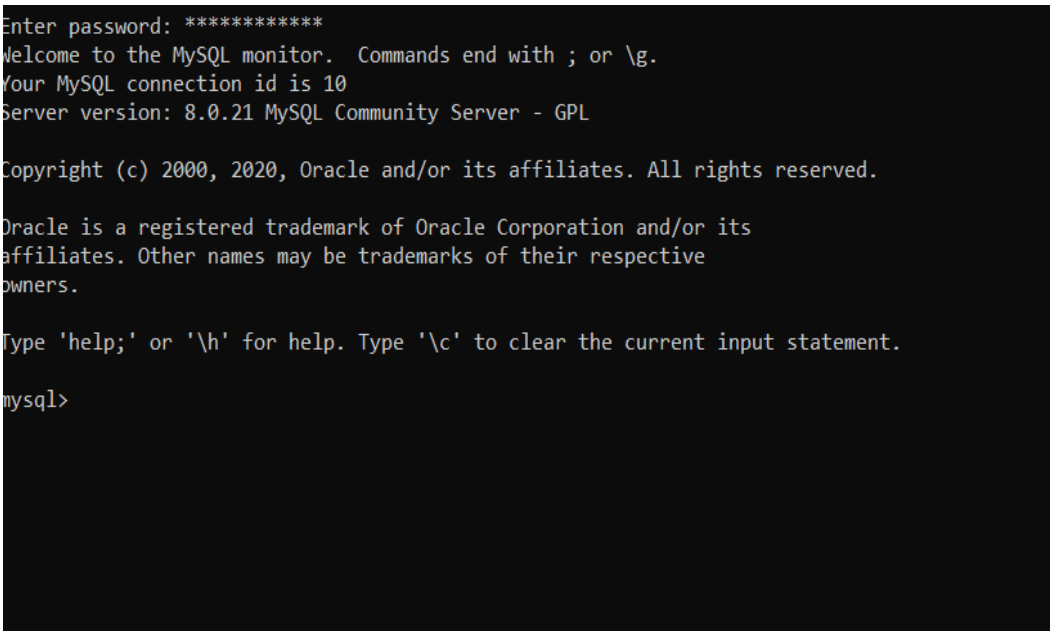
12. **Apply configurations by checking all the configuration steps.**

13. **Now connect the MySQL to the server.**



14. Again apply configurations and you are ready to go

15. Now you can open mysql command line and start working with the databases.



Note : If you are asked for the password enter the password that you have given while installation of MySQL.

SQL SYNTAX AND COMMANDS :

1. Show the databases that are available in the local system :

```
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| cse2004            |
| dbms               |
| hari               |
| hospital           |
| information_schema |
| mysql              |
| performance_schema |
| sakila             |
| shop               |
| sys                |
| world              |
+--------------------+
11 rows in set (0.90 sec)
```

2. Create a database of your choice :

   Syntax : create database <database_name>;

   Now verify it by again giving the command as show databases

```
mysql> create database contribution;
Query OK, 1 row affected (0.94 sec)

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| contribution       |
| cse2004            |
| dbms               |
| hari               |
| hospital           |
| information_schema |
| mysql              |
| performance_schema |
| sakila             |
| shop               |
| sys                |
| world              |
+--------------------+
12 rows in set (0.00 sec)
```

3. Creating the table for the database that we have created :

   Use the database that you have created so in this case I have created the database name as contribution by giving the command as **use <database_name>**

   Syntax: CREATE TABLE table_name(column1 datatype,column2 datatype,column3 datatype,.....,PRIMARY KEY(one or more columns));

   Verify it by using the command 'show tables';

```
mysql> create table batch(Dept_No varchar(10) not null, Dept_Name varchar(20) not null,constraint pk_department primary
key(Dept_No));
Query OK, 0 rows affected (0.92 sec)

mysql> show tables;
+-----------------------+
| Tables_in_contribution |
+-----------------------+
| batch                 |
+-----------------------+
1 row in set (0.22 sec)
```

   What is not null ?

   This will allow the column not select null values

   Here the primary key is Dept_No so that we cant have any duplicate values.

4. Inserting values into the table :

   Syntax : insert into table <table_name> values(column1_value,column2_value……);

```
mysql> insert into batch values('DE0001','Cardiology');
Query OK, 1 row affected (0.30 sec)

mysql> insert into batch values('DE0002','heart specialist');
Query OK, 1 row affected (0.21 sec)
```

5. Show all the records that we inserted into the table :

   Syntax : select * from <table_name>;

```
mysql> select * from batch;
+---------+------------------+
| Dept_No | Dept_Name        |
+---------+------------------+
| DE0001  | Cardiology       |
| DE0002  | heart specialist |
+---------+------------------+
2 rows in set (0.02 sec)
```

6. Selecting based on condition :

   Syntax: select column1,column2 from <table_name> where condition;

```
mysql> select Dept_Name from batch where Dept_Name="Cardiology";
+------------+
| Dept_Name  |
+------------+
| Cardiology |
+------------+
1 row in set (0.03 sec)
```

7. Alter the table by changing to new table name

   Syntax: ALTER TABLE <Table_name> RENAME TO <new_table_name>;

```
mysql> ALTER TABLE batch RENAME TO girlscript;
Query OK, 0 rows affected (1.24 sec)

mysql> show tables;
+------------------------+
| Tables_in_contribution |
+------------------------+
| girlscript             |
+------------------------+
1 row in set (0.04 sec)
```

8. Alter the table by add a new column

   Syntax : ALTER TABLE <Table_name>

   ADD <new_column_name> datatype;

```
mysql> ALTER TABLE girlscript ADD salary int;
Query OK, 0 rows affected (1.75 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from girlscript;
+---------+-----------------+--------+
| Dept_No | Dept_Name       | salary |
+---------+-----------------+--------+
| DE0001  | Cardiology      |   NULL |
| DE0002  | heart specialist |   NULL |
+---------+-----------------+--------+
2 rows in set (0.00 sec)
```

9. Drop the table that we have created :

   Syntax : drop table <table_name>;

```
mysql> drop table girlscript;
Query OK, 0 rows affected (0.54 sec)
```

10. Again create and insert the values using above mentioned commands

```
mysql> create table girlscript(Dept_No varchar(10) not null, Dept_Name varchar(20) not null,salary int not null,constrai
nt pk_department primary key(Dept_No));
Query OK, 0 rows affected (1.84 sec)

mysql> insert into girlscript values('DE0001','Cardiology',2000);
Query OK, 1 row affected (0.20 sec)

mysql> insert into girlscript values('DE0002','heart specialist',4000);
Query OK, 1 row affected (0.20 sec)
```

11. **Now we can see mathematical functions :**

    i) Sum :

    Syntax: select sum(column_name) from <table_name>;

```
mysql> select sum(salary) from girlscript;
+-------------+
| sum(salary) |
+-------------+
|        6000 |
+-------------+
1 row in set (0.10 sec)
```

ii) Avg:

Syntax: select avg(column_name) from <table_name>;

```
mysql> select avg(salary) from girlscript;
+-------------+
| avg(salary) |
+-------------+
|   3000.0000 |
+-------------+
1 row in set (0.00 sec)
```

iii) Count :

Count the no of rows in the table of a particular column

Syntax: select count(column_name) from <table_name>;

```
mysql> select count(salary) from girlscript;
+---------------+
| count(salary) |
+---------------+
|             2 |
+---------------+
1 row in set (0.13 sec)
```

iv) Ascending order :

Print the table in the ascending order with respect to a particular column in the table.

Syntax: select column1, …… from <table_name> order by <column_name> asc;

```
mysql> select Dept_No,Dept_Name,salary from girlscript order by salary asc;
+---------+------------------+--------+
| Dept_No | Dept_Name        | salary |
+---------+------------------+--------+
| DE0001  | Cardiology       |   2000 |
| DE0002  | heart specialist |   4000 |
+---------+------------------+--------+
2 rows in set (0.00 sec)
```

v) Descending Order :

Print the table in the descending order with respect to a particular column in the table.

Syntax: select column1, …… from <table_name> order by <column_name> desc;

```
mysql> select Dept_No,Dept_Name,salary from girlscript order by salary desc;
+---------+------------------+--------+
| Dept_No | Dept_Name        | salary |
+---------+------------------+--------+
| DE0002  | heart specialist |   4000 |
| DE0001  | Cardiology       |   2000 |
+---------+------------------+--------+
2 rows in set (0.00 sec)
```

12. Update the values in the rows

Syntax : update <table_name> set column_name=value where condition ;

```
mysql> update girlscript set salary=30000 where salary=4000;
Query OK, 1 row affected (0.12 sec)
Rows matched: 1  Changed: 1  Warnings: 0

mysql> select * from girlscript;
+---------+------------------+--------+
| Dept_No | Dept_Name        | salary |
+---------+------------------+--------+
| DE0001  | Cardiology       |   2000 |
| DE0002  | heart specialist |  30000 |
+---------+------------------+--------+
2 rows in set (0.04 sec)
```

13. Delete a particular row depending on a condition

Syntax : delete from <table_name> where condition ;

```
mysql> delete from girlscript where salary=30000;
Query OK, 1 row affected (0.16 sec)

mysql> select * from girlscript;
+---------+------------+--------+
| Dept_No | Dept_Name  | salary |
+---------+------------+--------+
| DE0001  | Cardiology |   2000 |
+---------+------------+--------+
1 row in set (0.03 sec)
```

14. Drop the particular column using alter

Syntax:alter table <table_name> drop column <column_name>;

```
mysql> alter table girlscript drop column salary;
Query OK, 0 rows affected (2.86 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> select * from girlscript;
+---------+------------+
| Dept_No | Dept_Name  |
+---------+------------+
| DE0001  | Cardiology |
+---------+------------+
1 row in set (0.00 sec)
```