

Database- Day -1: MySQL

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Installing MySql:

Video Ref: <https://youtu.be/k5tlCunelSU?si=Wft5eTgCvKO9lrWJ>

<https://www.mysql.com/downloads/>

Step-1:

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Thursday, September 28, 2023

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Click-> last line -> MySql Community (GPL) Downloads.

Step-2:

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- [MySQL SUSE Repository](#)
- [MySQL Community Server](#)
- [MySQL Cluster](#)
- [MySQL Router](#)
- [MySQL Shell](#)
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- [MySQL NDB Operator](#)
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- [MySQL Installer for Windows](#)
- [C API \(libmysqlclient\)](#)
- [Connector/C++](#)
- [Connector/J](#)
- [Connector/NET](#)
- [Connector/Node.js](#)
- [Connector/ODBC](#)
- [Connector/Python](#)
- [MySQL Native Driver for PHP](#)
- [MySQL Benchmark Tool](#)
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Click : [MySQL installer for windows](#)

Step-3:



Note: MySQL 8.0 is the final series with MySQL Installer. As of MySQL 8.1, use a MySQL product's MSI or Zip archive for installation. MySQL Server 8.1 and higher also bundle MySQL Configurator, a tool that helps configure MySQL Server.

Select Version:

8.0.34

Select Operating System:

Microsoft Windows

Windows (x86, 32-bit), MSI Installer

8.0.34

2.4M

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(mysql-installer-web-community-8.0.34.0.msi)

MD5: 01baf7b42e551d53efb557eed401ff91 | [Signature](#)

Windows (x86, 32-bit), MSI Installer

8.0.34

331.3M

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(mysql-installer-community-8.0.34.0.msi)

MD5: 59eaa511c39011a2f0264311a80b0228 | [Signature](#)



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Click -> Windows(x86, 32bit), MSI installer (second one) 8.0.34 331.3m , it supports both 32 and 64 bit os.

Step:4

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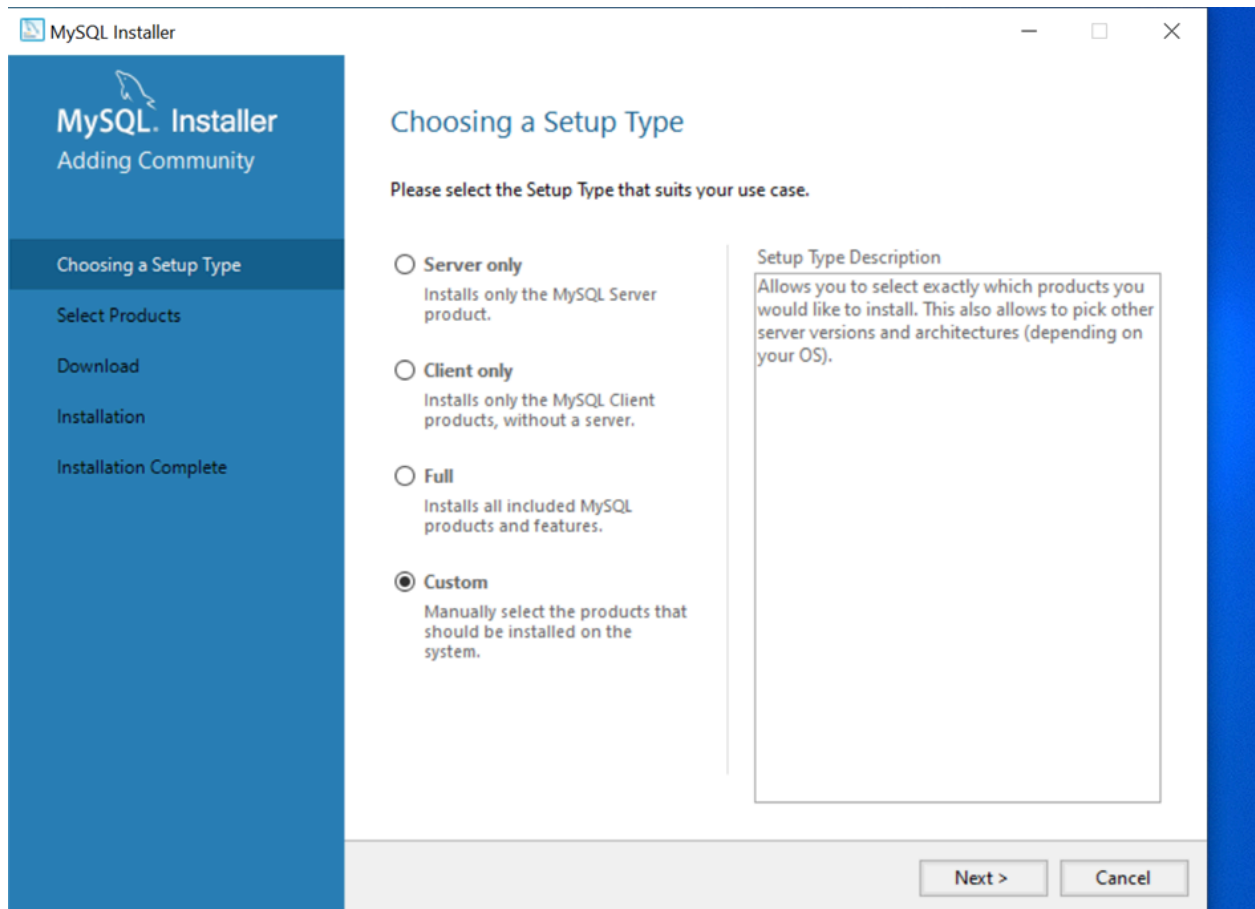
for an Oracle Web account

MySQL.com is using Oracle SSO for authentication. If you already have an Oracle Web account, click the Login link. Otherwise, you can signup for a free account by clicking the Sign Up link and following the instructions.

No thanks, just start my download.

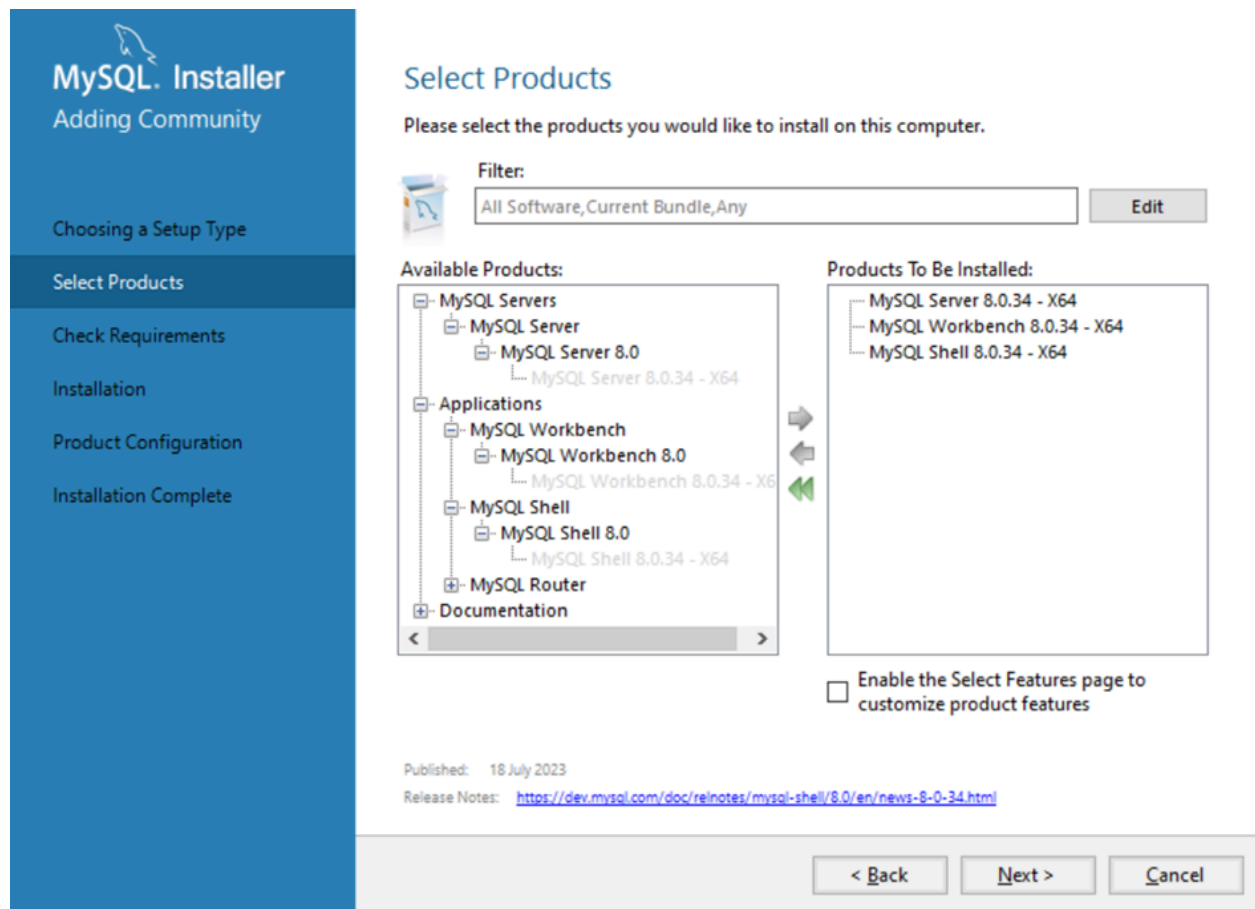
Click -> No thanks

Step-5



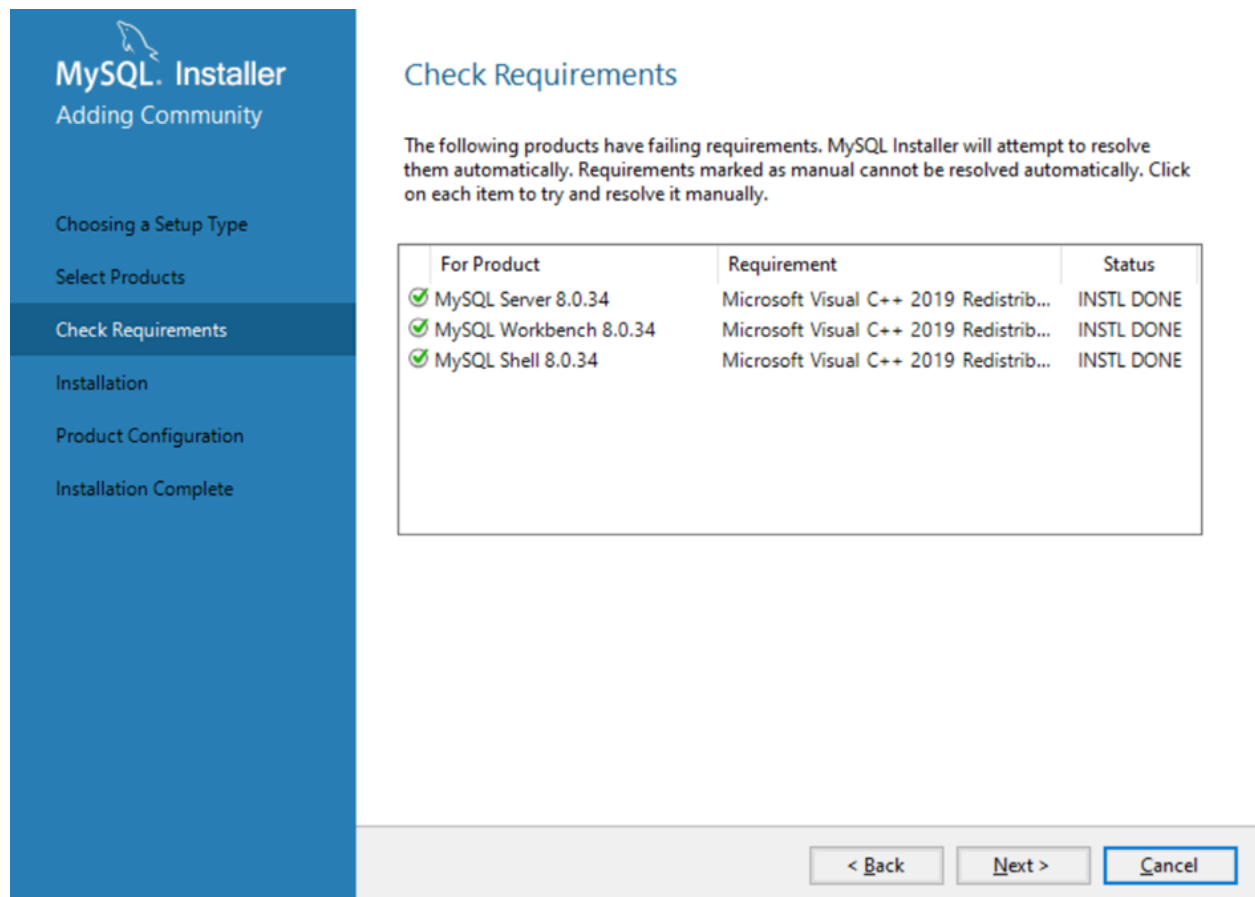
Click -> Custom

Step: 6



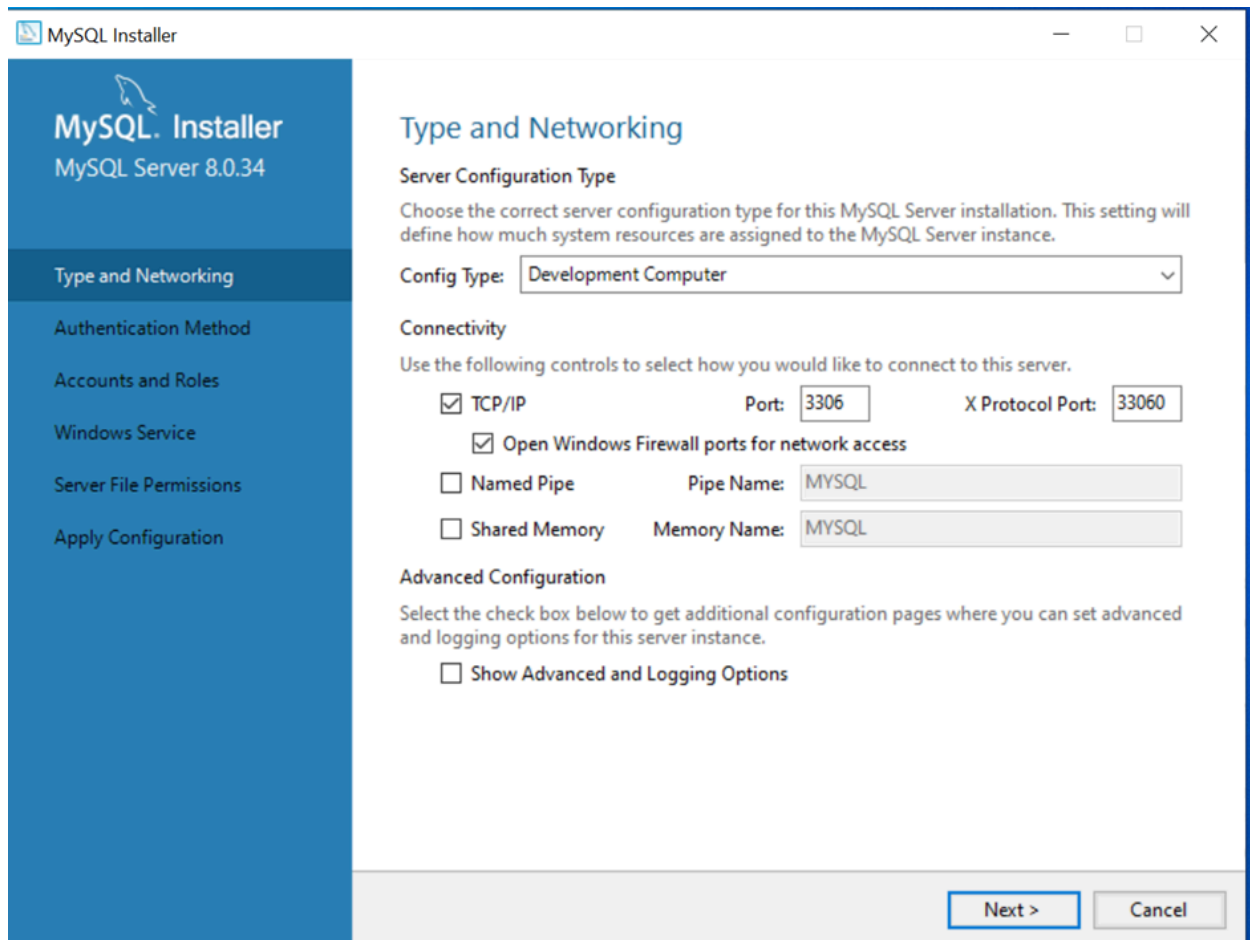
Click: mysqlsqserver, mysqlworkbench, mysql shell -> push to right side.

Step:7



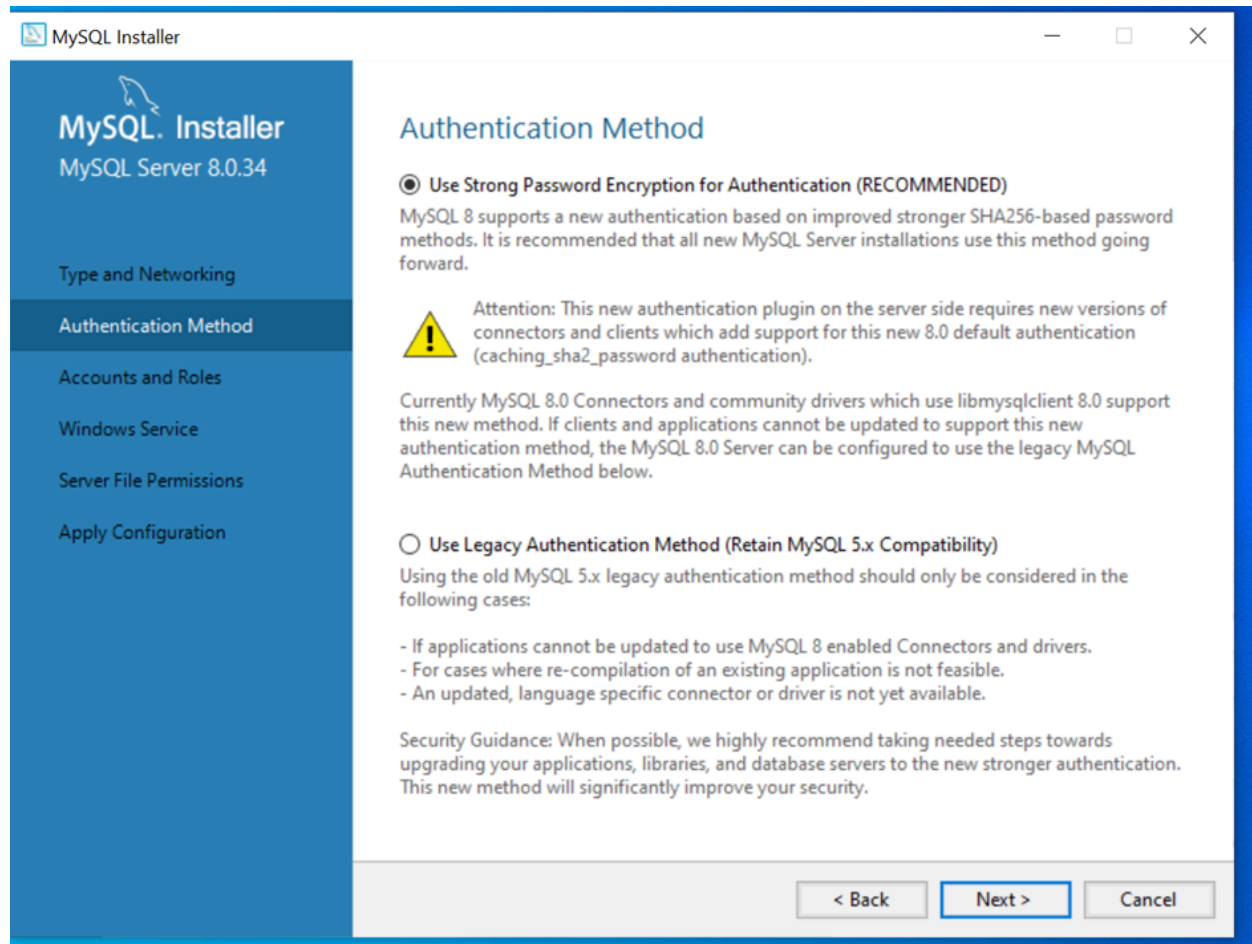
Click -> execute & next

Step:8



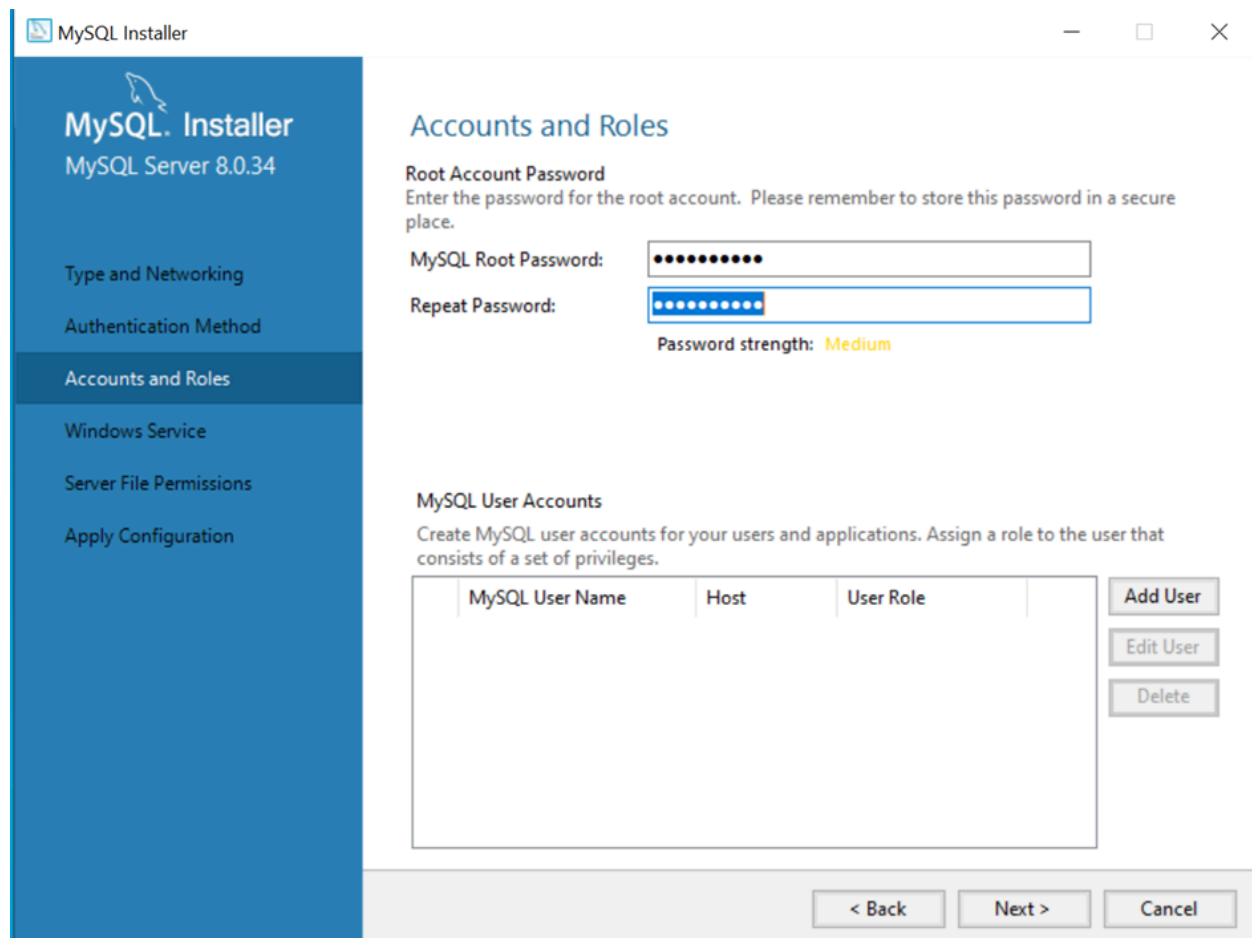
Click -> check port 3306 - > and click next

Step:9



Click-> next

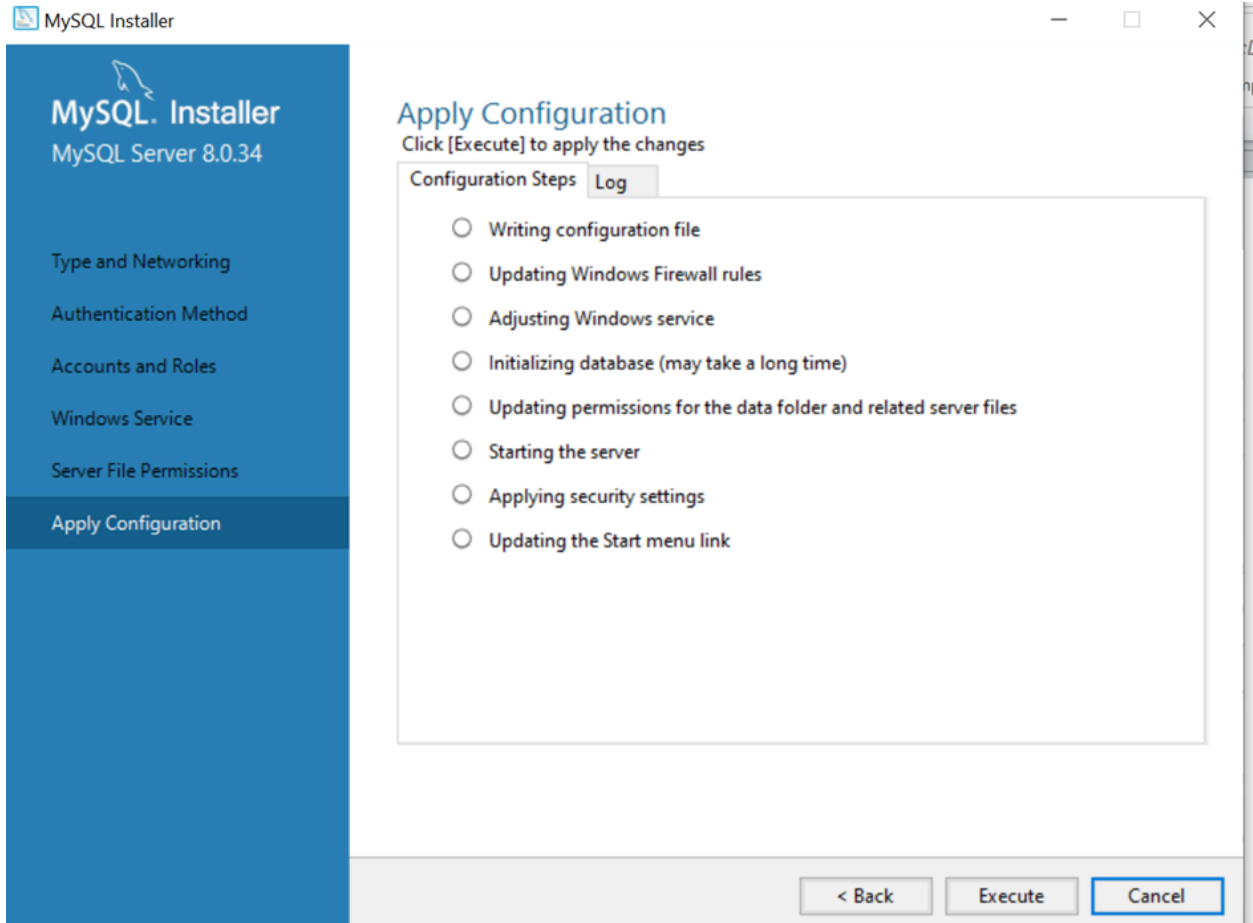
Step-10



Give your mysql root password & repeat password: **remember always**

**Continuous other step click next
finally**

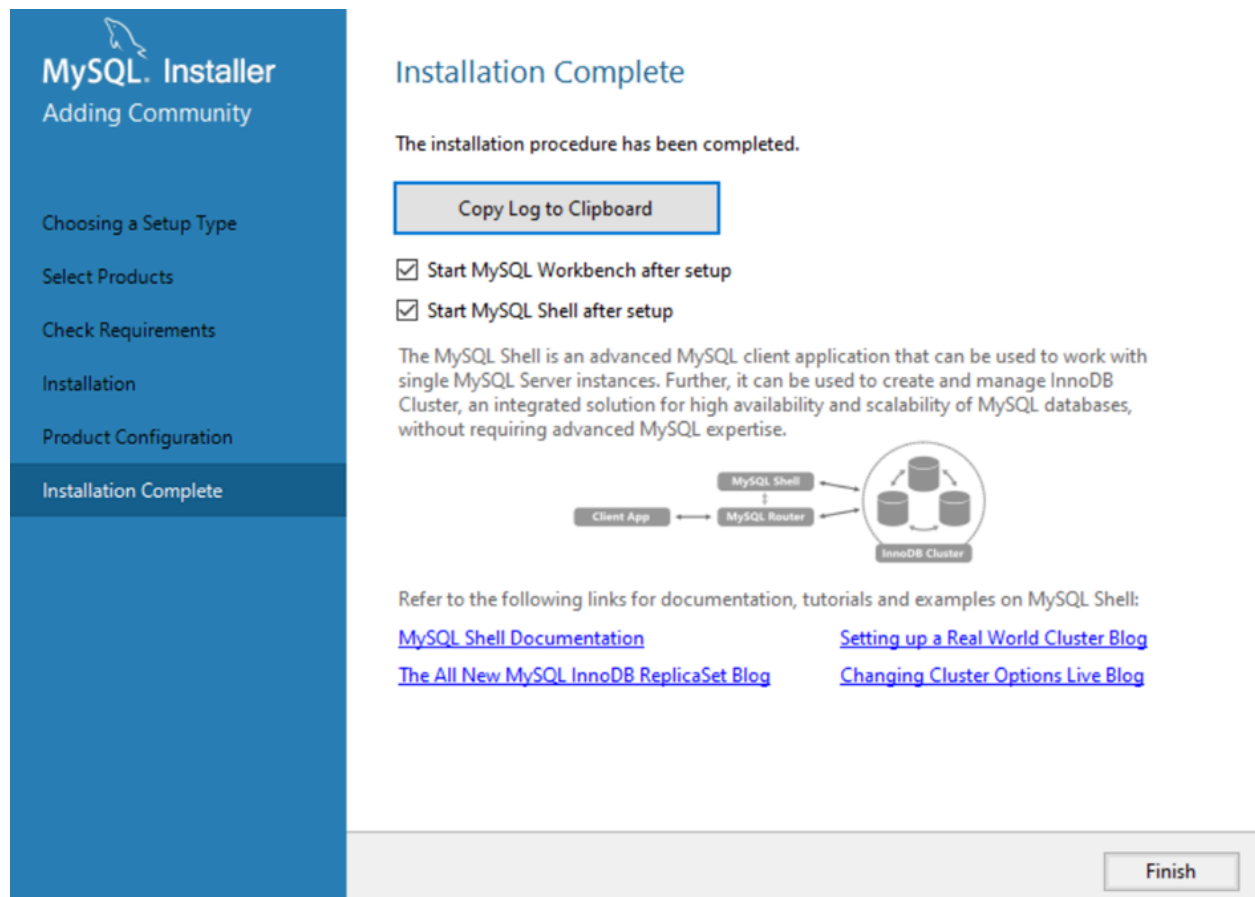
Step:11



Click -> execute

& two step click next & finally

Step:12



Click-> finish

Step:13

Set Environment variable -> path -> new -> paste this path

Path: C:\Program Files\MySQL\MySQL Server 8.0\bin

Step:14

Open command prompt and type this command

```
Command Prompt - mysql -u root -p
Microsoft Windows [Version 10.0.19045.3448]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Digital Suppliers>mysql --version
mysql Ver 8.0.34 for Win64 on x86_64 (MySQL Community Server - GPL)

C:\Users\Digital Suppliers>mysql -u root -p
Enter password: *****
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 11
Server version: 8.0.34 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

Show databases & create database commands:

C:\ Command Prompt - mysql -u root -p

```
mysql> show databases;
```

Database
information_schema
mysql
performance_schema
sys

```
4 rows in set (0.02 sec)
```

```
mysql> create database B50TamilDB;  
Query OK, 1 row affected (0.01 sec)
```

```
mysql> show databases;
```

Database
b50tamildb
information_schema
mysql
performance_schema
sys

```
5 rows in set (0.00 sec)
```

```
mysql>
```

Introduction to database :

A database is a **structured collection of data** that is organized and **stored in a way that allows efficient access, retrieval, and manipulation of that data**. Databases play a crucial role in computing and information systems, and they are fundamental to the **storage and management of data** in various applications and industries.

Key Features:

- Data Management
- Tables
- DBMS (Database Management System) – mysql, sql, postgresql, mariadb, mongoDB
- SQL (Structured Query Language)
- Relational Databases
- NoSQL Databases
- **Indexes -> performance optimization**
- **Transactions -> sequence of operation**
- **Normalization -> distinct ,avoiding duplication**
- **Data Security -> authentic**
- **Scalability -> load balance (sharding,replicaset, dis db)**
- Backup and Recovery

what is MySQL? :

MySQL is an open-source **relational database management system** (RDBMS) that is widely used for managing and manipulating structured data. It falls under the category of relational databases, which means it stores data in **tables with predefined schemas**, and it supports SQL (Structured Query Language) for querying and managing the data.

SQL Databases:

Structured Data: SQL databases are relational databases that store **structured data in tables with predefined schemas. Data is organized into rows and columns.**

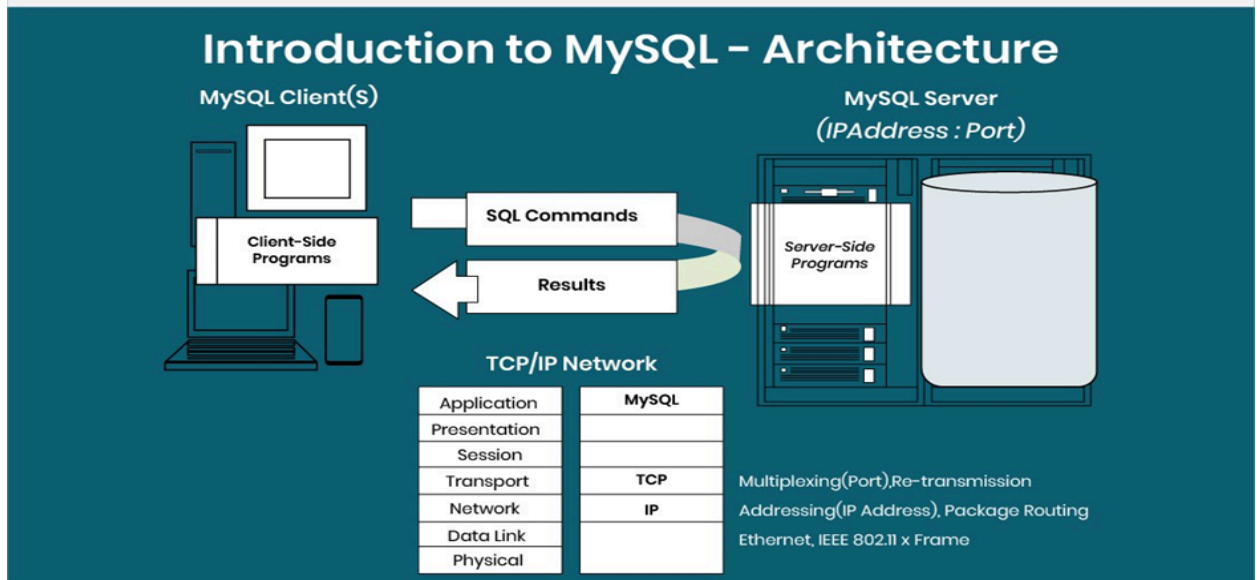
Unstructured or Semi-Structured Data:

NoSQL databases are designed to handle unstructured, semi-structured, or highly variable data. **They can store documents, key-value pairs**, graphs, and more. (like JS -> objects). Json (mongoDB)

intro to MySQL engines :

a database engine (also referred to as a storage engine) is a crucial component that determines how data is stored, retrieved, and manipulated within a MySQL database.

MySQL supports multiple **storage engines**, each with its own features, performance characteristics, and capabilities. Choosing the right storage engine for your specific use case is essential, as it can significantly impact the behavior and performance of your MySQL database.



Basic queries - create db, table insert, update, alter

PDF reference for mysql queries:

https://people.eecs.ku.edu/~hossein/746/MySQL/Docs/mysql_by_examples.pdf

Create Table Syntax & Examples:

Syntax:

```
CREATE TABLE table_name ( column1 datatype constraints,  
column2 datatype constraints, ... columnN datatype constraints);
```

Eg:

```
mysql> create database empDB;
```

Query OK, 1 row affected (0.01 sec)

```
mysql> use empDB;
```

Database changed

```
mysql> create table employees(
```

```
    -> empid INT PRIMARY key,
```

```
    -> first_name VARCHAR(50),
```

```
    -> last_name varchar(50),
```

```
    -> designantion varchar(50)
```

```
    -> );
```

Query OK, 0 rows affected (0.04 sec)

Insert Table Syntax & Examples:

Syntax:

```
INSERT INTO table_name (column1, column2, ..., columnN)
```

```
VALUES (value1, value2, ..., valueN);
```

Eg:

```
mysql> insert into
```

```
employees(empid,first_name,last_name,designantion)
```

```
values(1,'suresh','vikram','FSD');
```

Query OK, 1 row affected (0.02 sec)

Multiple values

```
mysql> insert into  
employees(empid,first_name,last_name,designantion) values  
(2,'sathvik','suresh','FSD'),  
(3,'rithu','suresh','FSD');
```

Query OK, 2 rows affected (0.00 sec)

Primary key error , you have to show

```
insert into employee(empid,first_name,last_name,designation)  
values (4,'baskar','rajesh','fsd');
```

**ERROR 1062 (23000): Duplicate entry '4' for key
'employee.PRIMARY'**

```
mysql> select * from employees;
```

Update Table Syntax & Examples:

Syntax:

```
UPDATE table_name SET column1 = value1, column2 = value2, ..  
WHERE condition;
```

Eg:

```
mysql> update employees set designantion = "python Developer"  
where empid=2;
```

Query OK, 1 row affected (0.02 sec)

Delete Table Syntax & Examples:

Syntax:

` DELETE FROM table_name WHERE condition;

Eg:

mysql> delete from employees where empid=3;

Query OK, 1 row affected (0.01 sec)

Alter Command Syntax & Examples: change the structure

Syntax:

` ALTER TABLE table_name ADD column_name datatype

Eg:

ALTER TABLE employee MODIFY COLUMN designation
VARCHAR(255);

ALTER TABLE employees CHANGE COLUMN f_name first_name
VARCHAR(100);

ALTER TABLE employee CHANGE COLUMN l_name last_name
VARCHAR(100);

ALTER TABLE employees ADD email VARCHAR(255);

mysql> UPDATE employee set email='rirhik@gmail.com' where empid=2;

select - where clause, distinct, group by, order by, offset, limit

select :

select * from employees;

where clause: (Filter)

mysql> select * from employees where empid=1;

mysql> select * from employees where first_name='suresh';

mysql> select empid, designation from employees where first_name='rithu';

distinct: (Normalization, avoid duplication)

mysql> select distinct designation from employees;

group by: (group rows that have the same values)

mysql> select designation, count(*) from employees group by designation;

mysql> select designation, count(*) as emp_count from employees group by designation;

COUNT(*): This is an aggregate default function that counts the number of rows in each group

order by: (sorting)

```
mysql> select * from employees order by empid ; (default asc)
```

```
mysql> select * from employees order by empid asc;
```

```
select * from employees order by empid desc;
```

```
mysql> select * from employee order by first_name desc;
```

offset, limit:(Pagination)

```
mysql> select * from employees limit 2;
```

```
mysql> select * from employees limit 2 offset 1;
```

```
mysql> select * from employees limit 2 offset 2;
```

Foriegn key example:

```
CREATE TABLE department (  
    id INT AUTO_INCREMENT PRIMARY KEY,  
    name VARCHAR(255) NOT NULL  
);
```

```
CREATE TABLE employee (  
    id INT AUTO_INCREMENT PRIMARY KEY,  
    name VARCHAR(255) NOT NULL,  
    department_id INT,  
    FOREIGN KEY (department_id) REFERENCES department(id)  
);
```

```
INSERT INTO department (name) VALUES ('HR'), ('Finance'), ('Engineering');
```

```
INSERT INTO employee (name, department_id) VALUES ('Suresh', 1), ('Rithik',  
2), ('Sathvik', 3);
```

