



Database Testing with Selenium 4 (Java)

(Automation QA/SDET)

**Prepared by :-
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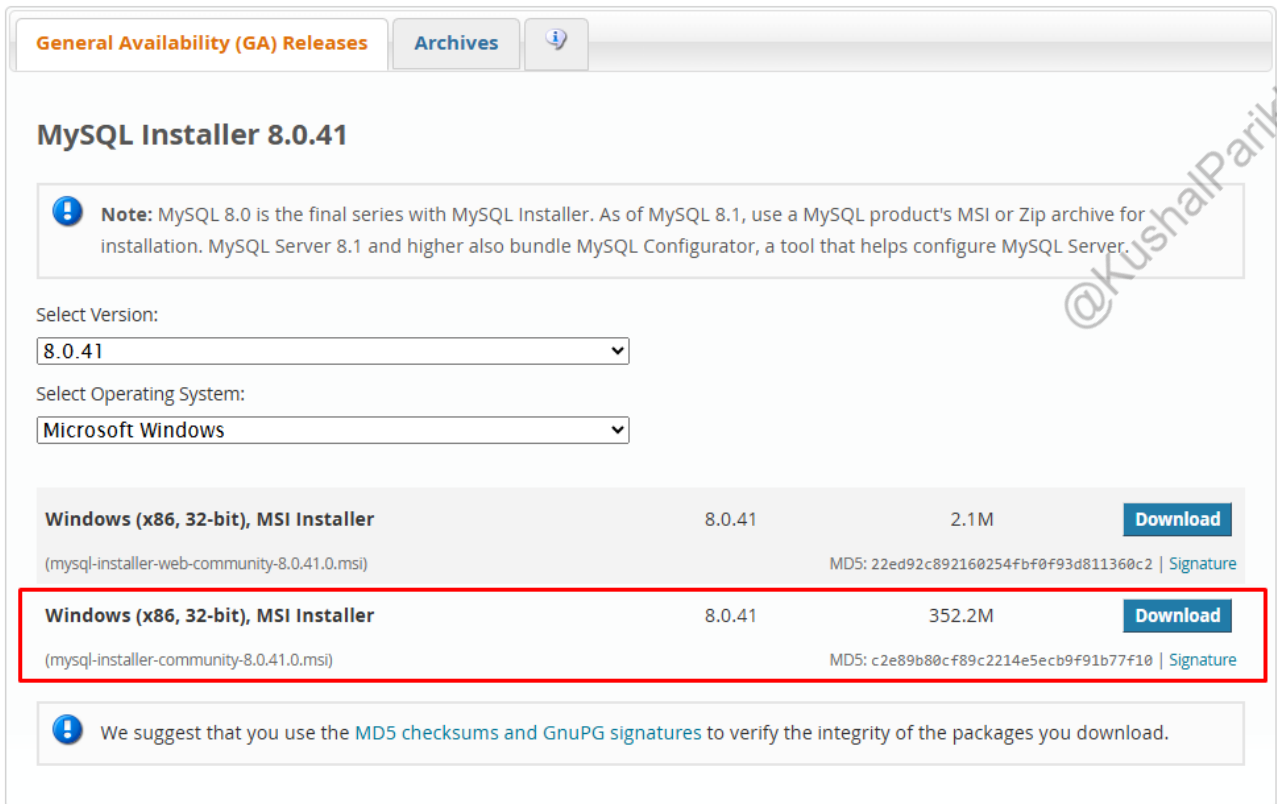
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1) Setup SQL Database in your local

1. Download link - <https://dev.mysql.com/downloads/installer/>
2. Click on "Download "

MySQL Community Downloads

MySQL Installer



General Availability (GA) Releases Archives

MySQL Installer 8.0.41

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:
8.0.41

Select Operating System:
Microsoft Windows

Windows (x86, 32-bit), MSI Installer (mysql-installer-web-community-8.0.41.0.msi)	8.0.41	2.1M	Download
Windows (x86, 32-bit), MSI Installer (mysql-installer-community-8.0.41.0.msi)	8.0.41	352.2M	Download

MD5: 22ed92c892160254fbf0f93d811360c2 | Signature

MD5: c2e89b80cf89c2214e5ecb9f91b77f10 | Signature

We suggest that you use the MD5 checksums and GnuPG signatures to verify the integrity of the packages you download.

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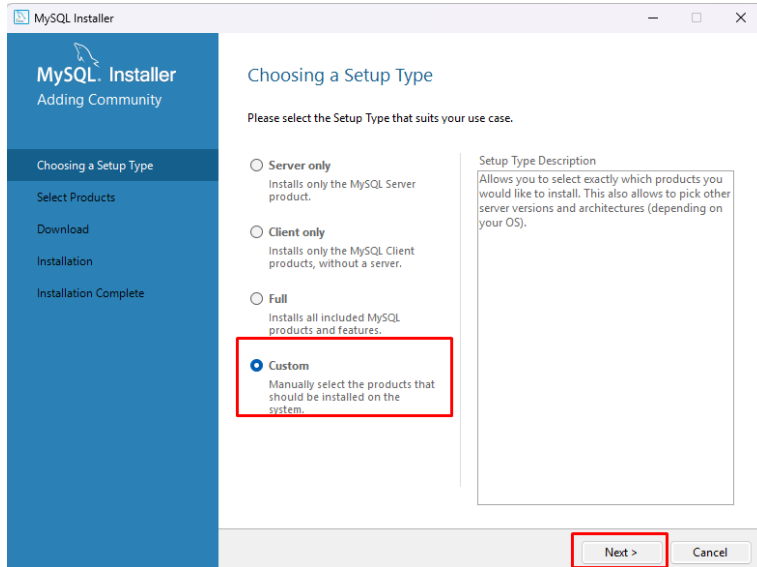
No thanks, just start my download.

Wait till download is completed....

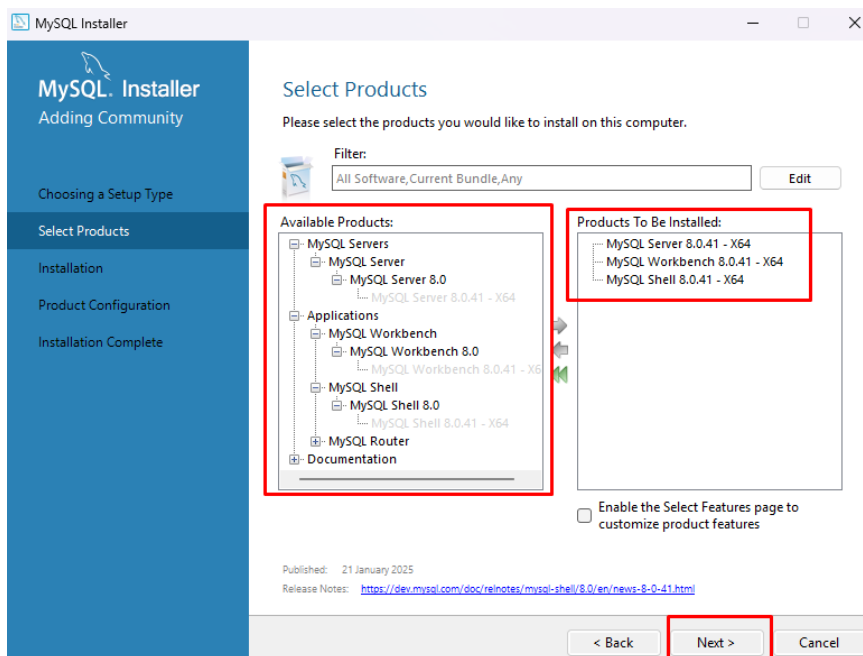
4. Once download is done, click on downloaded installer & choose the “Custom” & click next button

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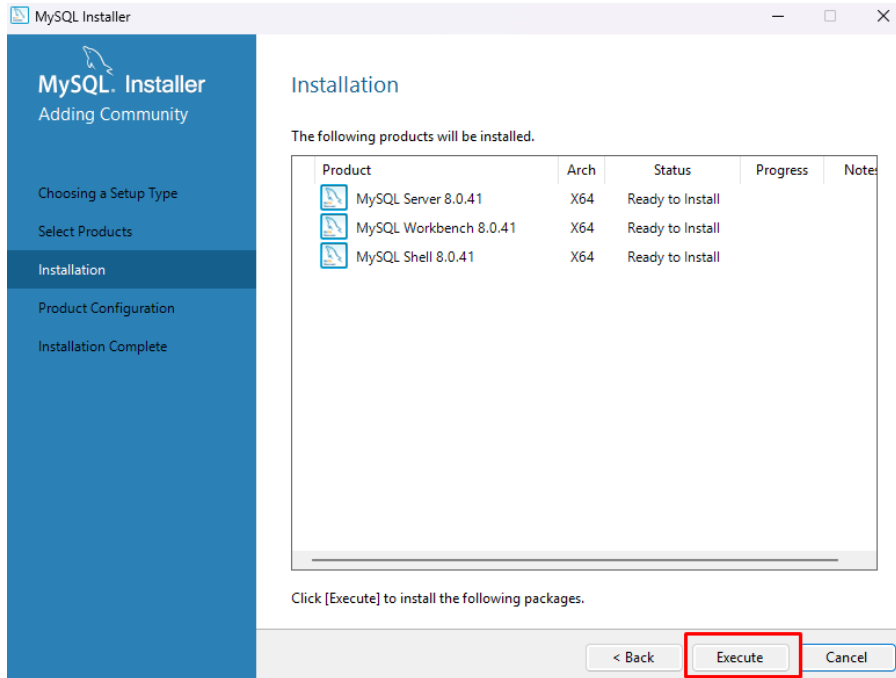


5. Now select the highlighted products & click on next button & then click on Execute button



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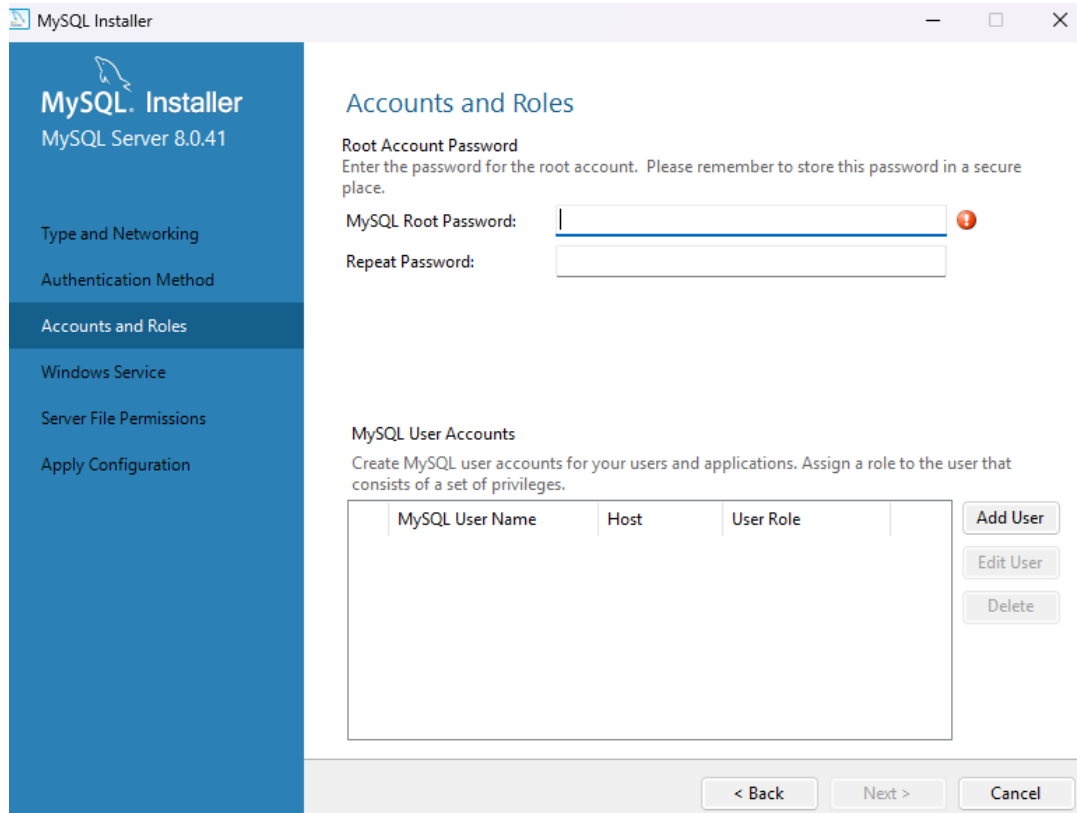


6. Click on next buttons until below screen comes :

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The screenshot shows the 'MySQL Installer' window for 'MySQL Server 8.0.41'. The left sidebar has 'Accounts and Roles' selected. The main area is titled 'Accounts and Roles' and contains two sections. The first section, 'Root Account Password', asks for a password for the root account and includes a 'Repeat Password' field. The second section, 'MySQL User Accounts', provides instructions on creating user accounts and includes a table with columns 'MySQL User Name', 'Host', and 'User Role'. To the right of the table are buttons for 'Add User', 'Edit User', and 'Delete'. At the bottom of the window are buttons for '< Back', 'Next >', and 'Cancel'.

MySQL Installer
MySQL Server 8.0.41

Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Server File Permissions
Apply Configuration

Accounts and Roles

Root Account Password
Enter the password for the root account. Please remember to store this password in a secure place.

MySQL Root Password:

Repeat Password:

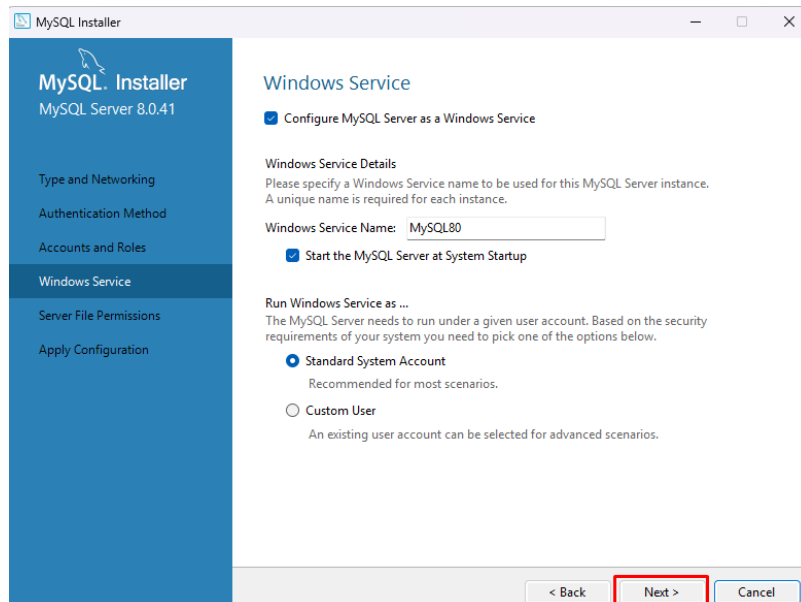
MySQL User Accounts
Create MySQL user accounts for your users and applications. Assign a role to the user that consists of a set of privileges.

MySQL User Name	Host	User Role
-----------------	------	-----------

Add User
Edit User
Delete

< Back Next > Cancel

7. Type your password & click on next button



The screenshot shows the 'MySQL Installer' window for 'MySQL Server 8.0.41'. The left sidebar has 'Windows Service' selected. The main area is titled 'Windows Service' and contains several sections. The first section, 'Configure MySQL Server as a Windows Service', has a checked checkbox. The second section, 'Windows Service Details', asks for a service name and has a text box containing 'MySQL80'. The third section, 'Start the MySQL Server at System Startup', has a checked checkbox. The fourth section, 'Run Windows Service as ...', has two radio button options: 'Standard System Account' (selected) and 'Custom User'. At the bottom of the window are buttons for '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a red box.

MySQL Installer
MySQL Server 8.0.41

Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Server File Permissions
Apply Configuration

Windows Service

☒ Configure MySQL Server as a Windows Service

Windows Service Details
Please specify a Windows Service name to be used for this MySQL Server instance. A unique name is required for each instance.

Windows Service Name:

☒ Start the MySQL Server at System Startup

Run Windows Service as ...
The MySQL Server needs to run under a given user account. Based on the security requirements of your system you need to pick one of the options below.

☒ Standard System Account
Recommended for most scenarios.

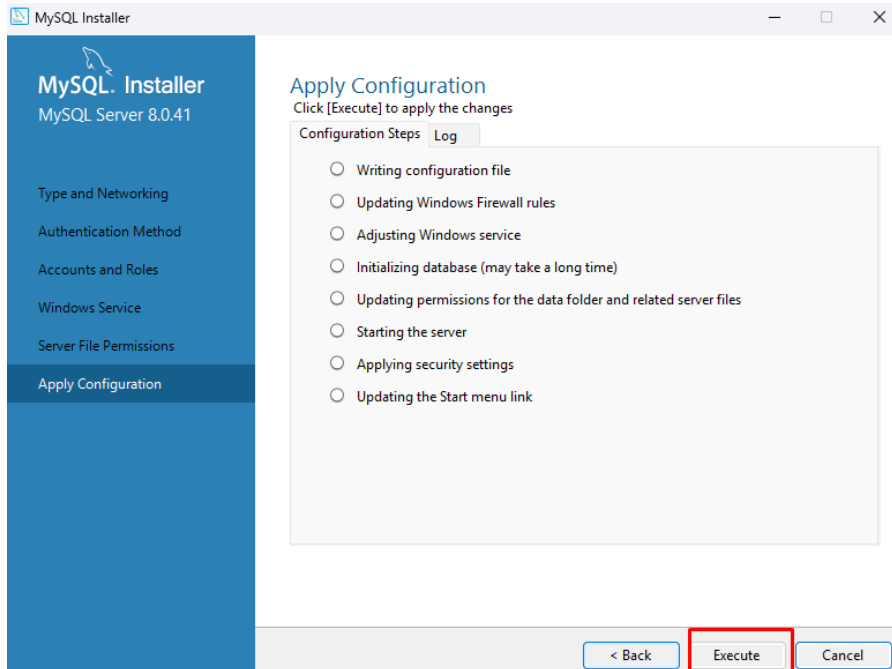
☐ Custom User
An existing user account can be selected for advanced scenarios.

< Back **Next >** Cancel

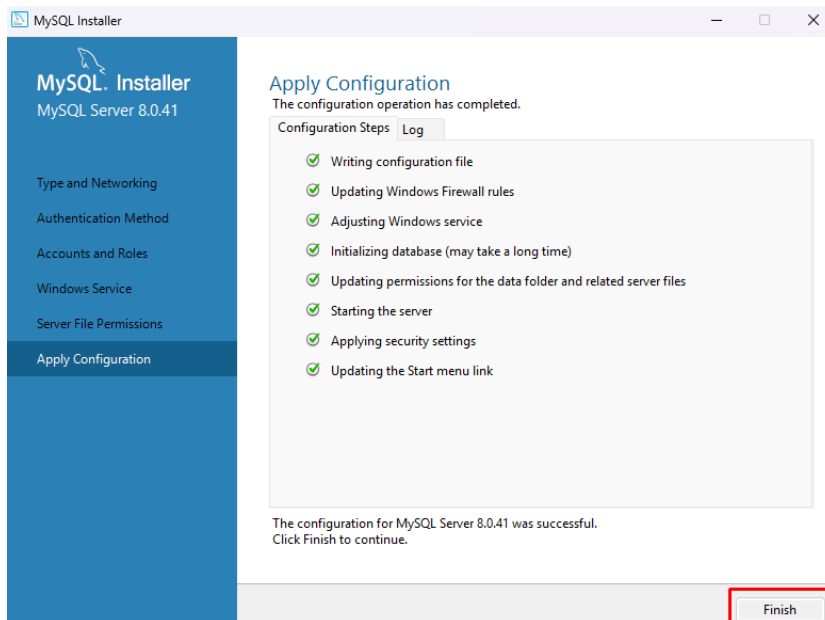
8. Click on Execute button

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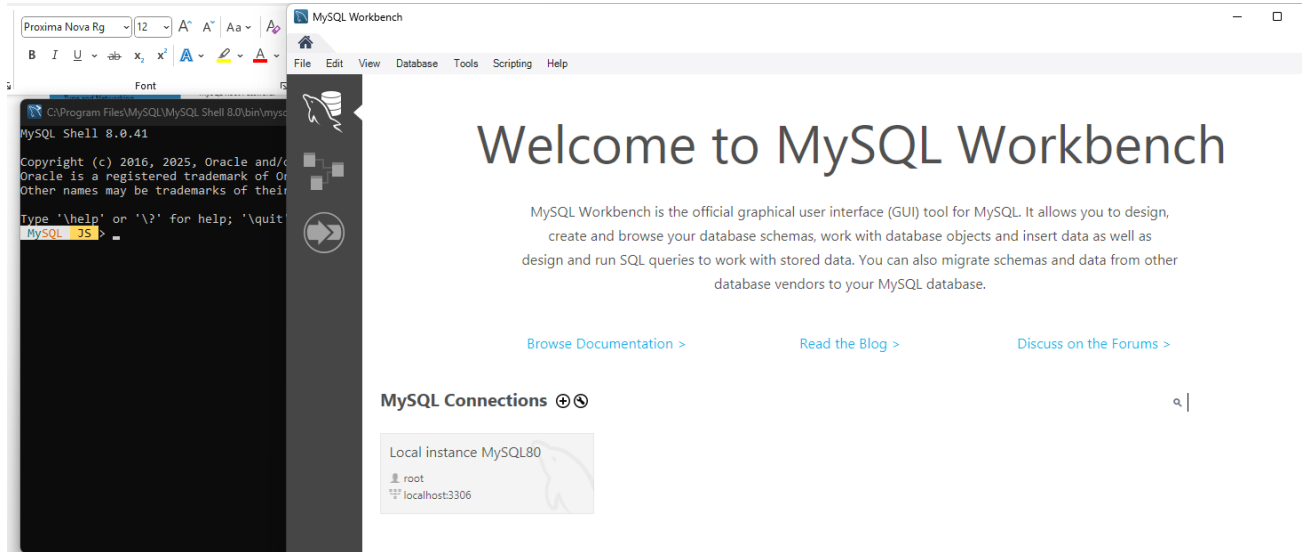
9. Click on Finish button



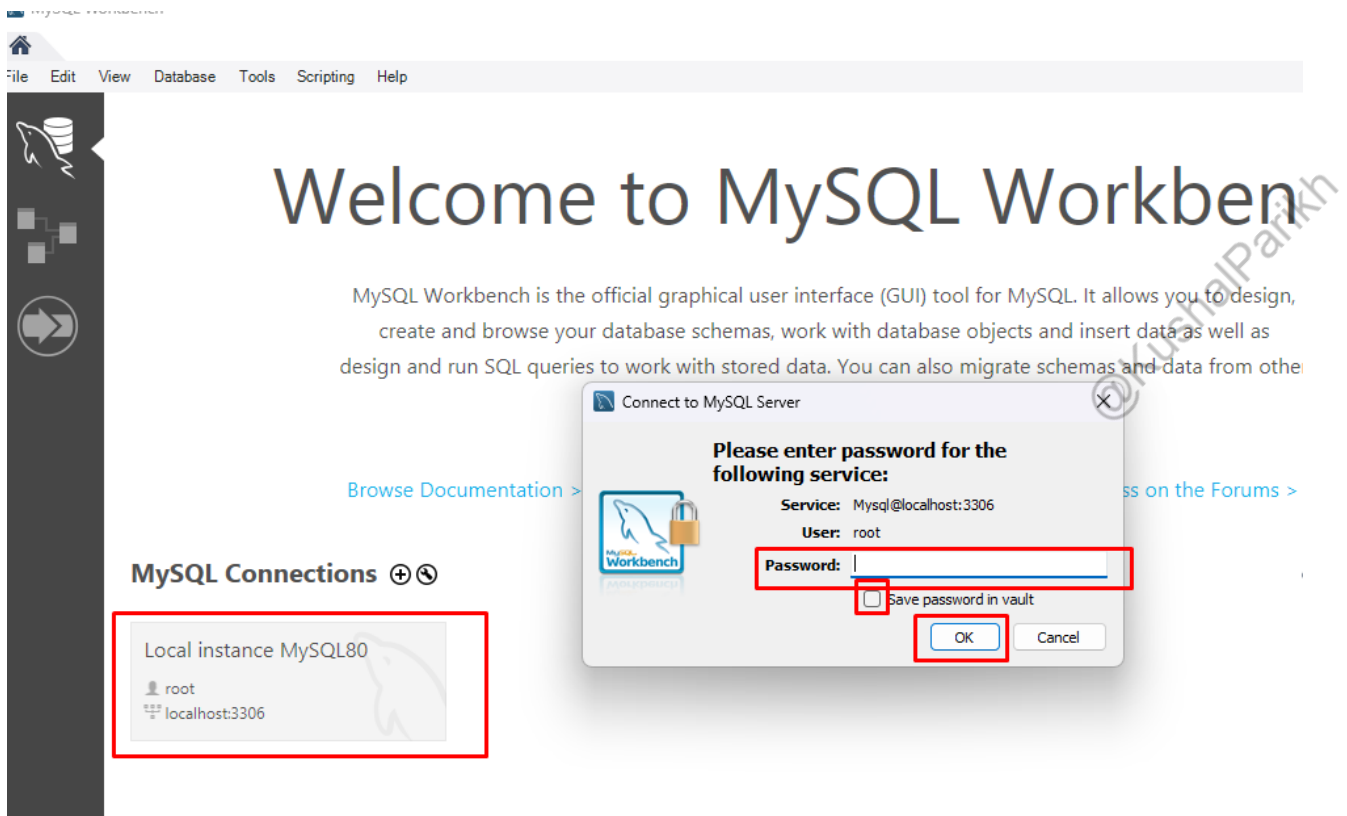
10. Now finish all further steps – click on Finish button & below screen will be open

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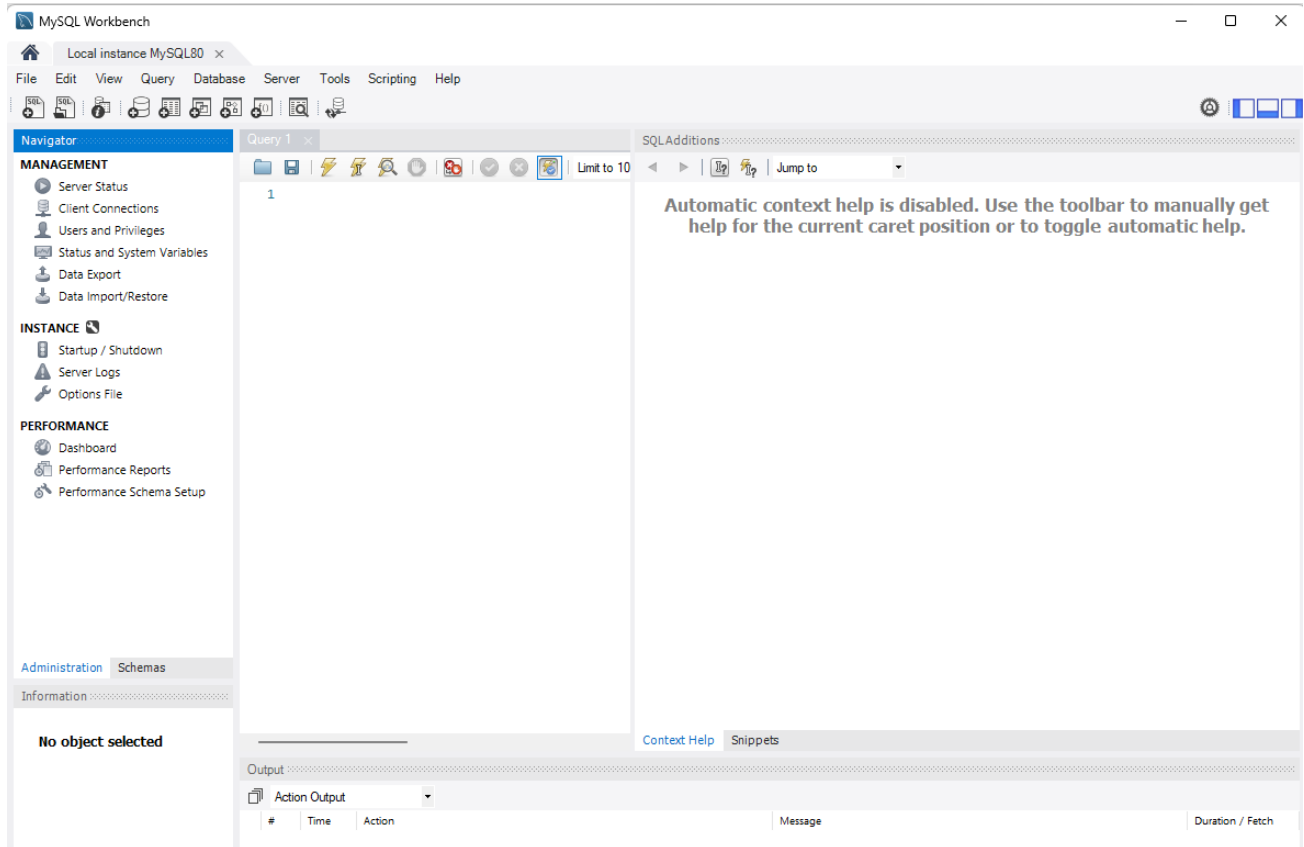
11. Click on highlighted section & enter your password used during setup and click on OK button



12. My SQL Workbench will be open

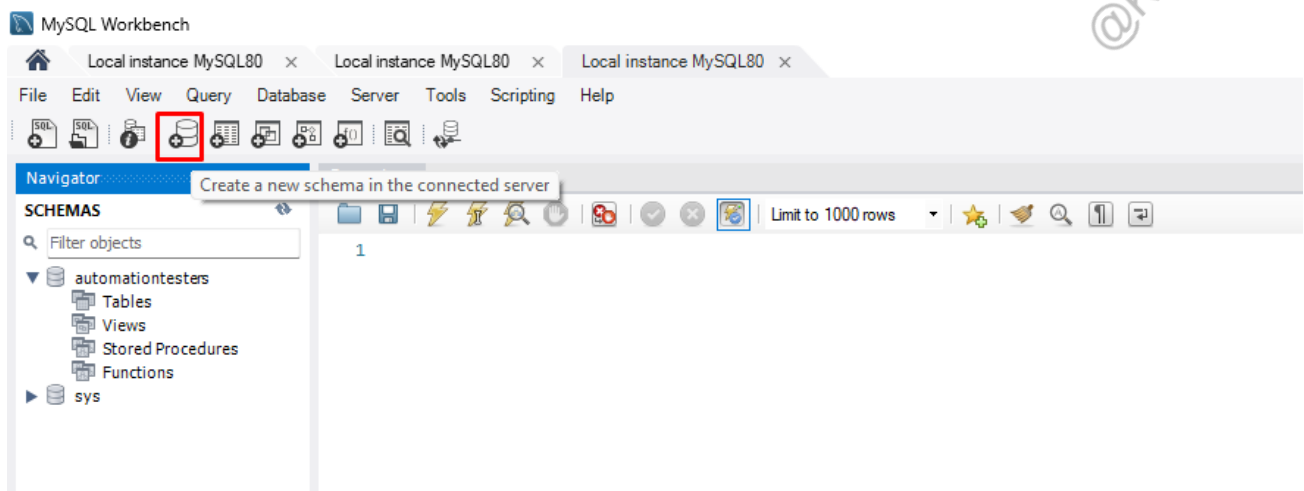
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2) How to create your own SQL Database table for testing purpose ?

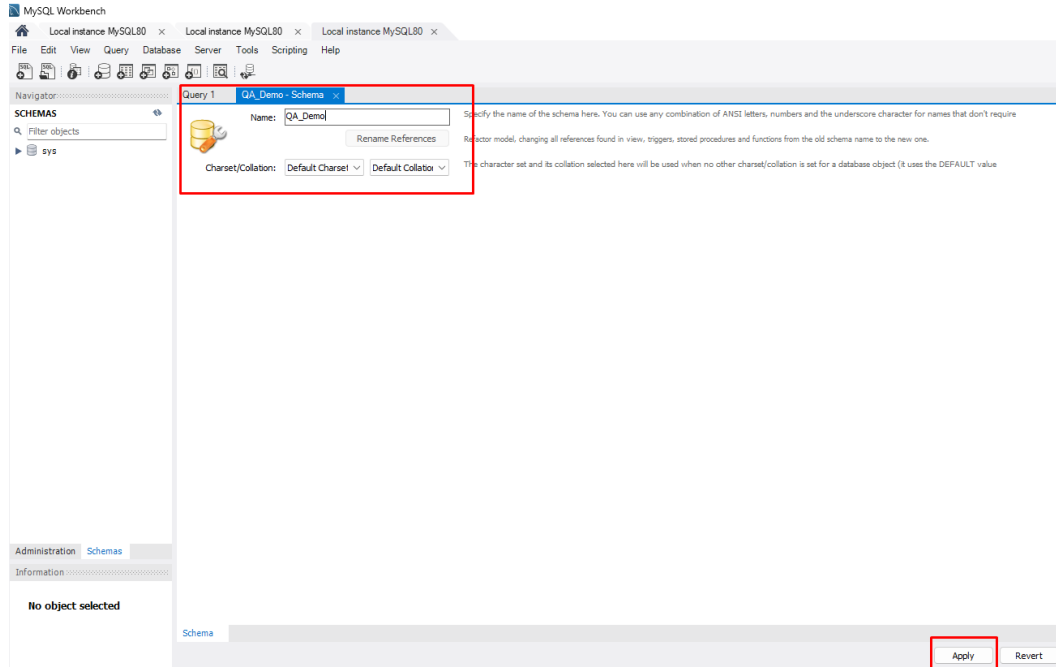
1. Click on "scheme" icon



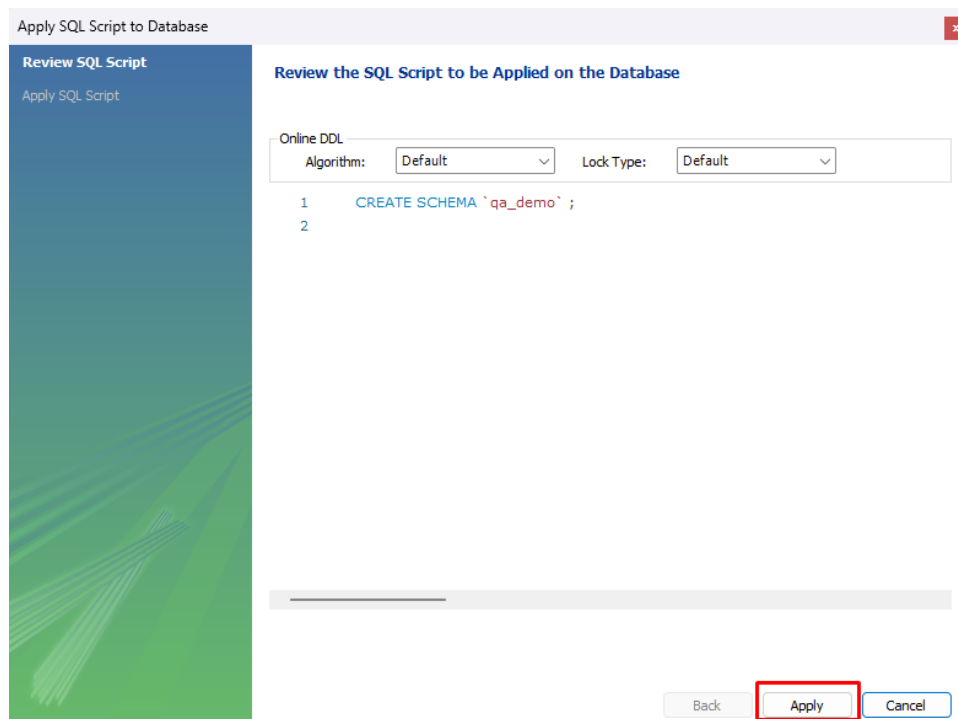
2. Enter your scheme name "Any Name You want" & click on Apply button

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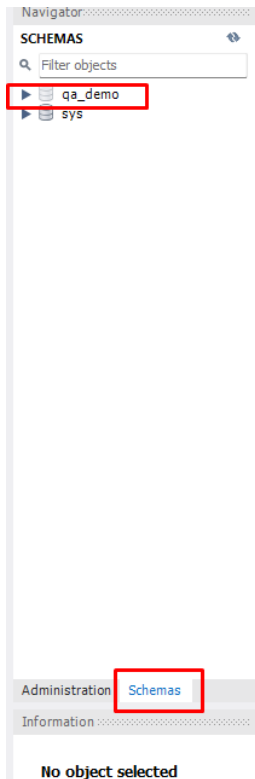


3. Click on Apply button again & click on Finish button

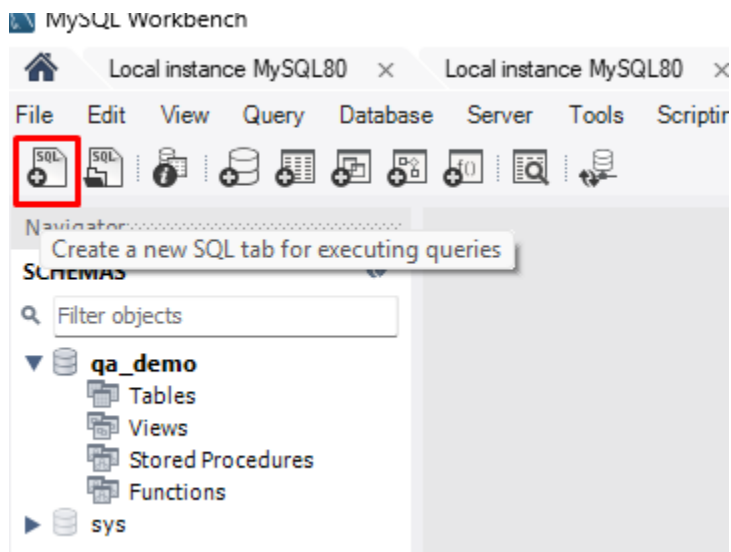


4. Click "Scheme" tab & your scheme is created successfully
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5. Now we will create our records for testing purpose – click on SQL Query Tab



6. Copy paste the below code in query section

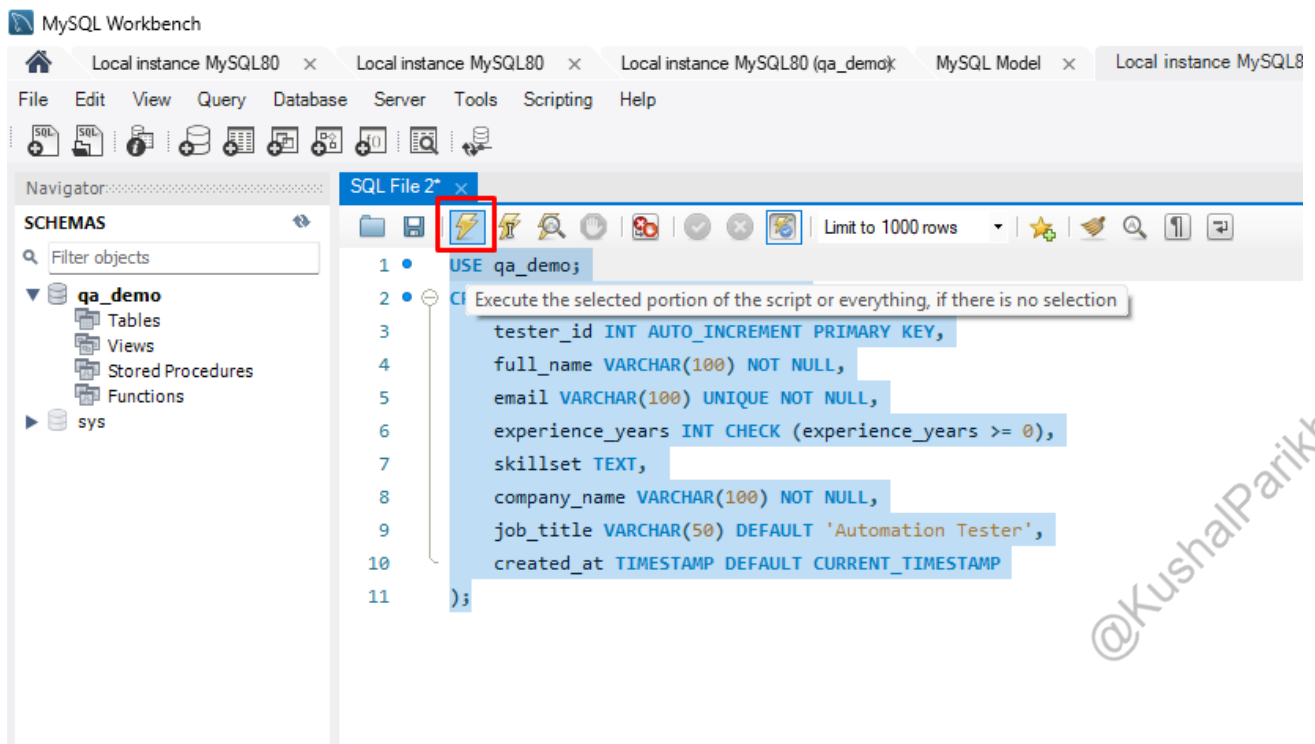
```
USE qa_demo;
```

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```
CREATE TABLE AutomationTesters (  
  tester_id INT AUTO_INCREMENT PRIMARY KEY,  
  full_name VARCHAR(100) NOT NULL,  
  email VARCHAR(100) UNIQUE NOT NULL,  
  experience_years INT CHECK (experience_years >= 0),  
  skillset TEXT,  
  company_name VARCHAR(100) NOT NULL,  
  job_title VARCHAR(50) DEFAULT 'Automation Tester',  
  created_at TIMESTAMP DEFAULT CURRENT_TIMESTAMP  
);
```

7. Press Ctrl + A & click on "execute" icon



8. Your table has been created successfully

Output				
Action Output				
#	Time	Action	Message	
1	23:26:25	USE qa_demo	0 row(s) affected	
2	23:26:25	CREATE TABLE AutomationTesters (tester_id INT AUTO_INCREMENT PRIMARY KEY, full_name VARCHAR(100) NOT NULL, email VARCHAR...	0 row(s) affected	

9. Now we will add our test records with SQL queries & then later we will try to add new records using Selenium with JDBC connections

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Use below SQL query to add new records & click on execute icon

```
USE qa_demo;

INSERT INTO AutomationTesters (full_name, email, experience_years, skillset, company_name,
job_title)
VALUES
('Alice Brown', 'alice.brown@example.com', 4, 'Selenium, Java, Cucumber', 'TCS', 'Senior Automation
Tester'),
('David Wilson', 'david.wilson@example.com', 6, 'Python, Cypress, API Testing', 'Swiggy', 'Lead QA
Engineer'),
('Emma Johnson', 'emma.johnson@example.com', 2, 'Selenium, Jenkins, API Testing', 'Deloitte',
'Automation Tester'),
('Michael Smith', 'michael.smith@example.com', 5, 'Java, Selenium, TestNG', 'Google', 'Automation
Engineer');
```

The screenshot displays the MySQL Workbench interface. On the left, the 'Navigator' pane shows the 'qa_demo' database schema with a table 'AutomationTesters' highlighted. The central 'SQL Editor' contains the following SQL query:

```
USE qa_demo;

INSERT INTO AutomationTesters (full_name, email, experience_years, skillset, company_name, job_title)
VALUES
('Alice Brown', 'alice.brown@example.com', 4, 'Selenium, Java, Cucumber', 'TCS', 'Senior Automation Tester'),
('David Wilson', 'david.wilson@example.com', 6, 'Python, Cypress, API Testing', 'Swiggy', 'Lead QA Engineer'),
('Emma Johnson', 'emma.johnson@example.com', 2, 'Selenium, Jenkins, API Testing', 'Deloitte', 'Automation Tester'),
('Michael Smith', 'michael.smith@example.com', 5, 'Java, Selenium, TestNG', 'Google', 'Automation Engineer');
```

The 'Output' pane at the bottom shows the execution results:

#	Time	Action	Message
1	23:26:25	USE qa_demo	0 row(s) affected
2	23:26:25	CREATE TABLE AutomationTesters (tester_id INT AUTO_INCREMENT PRIMARY KEY, full_name VARCHAR(100) NOT NULL, email VA...	0 row(s) affected
3	23:34:27	USE qa_demo	0 row(s) affected
4	23:34:27	INSERT INTO AutomationTesters full_name, email, experience_years, skillset, company_name, job_title VALUES ('Alice Brown', 'alice.brown@ex...	4 row(s) affected Records: 4 Duplicates: 0 Warnings: 0

Your records are created successfully!!

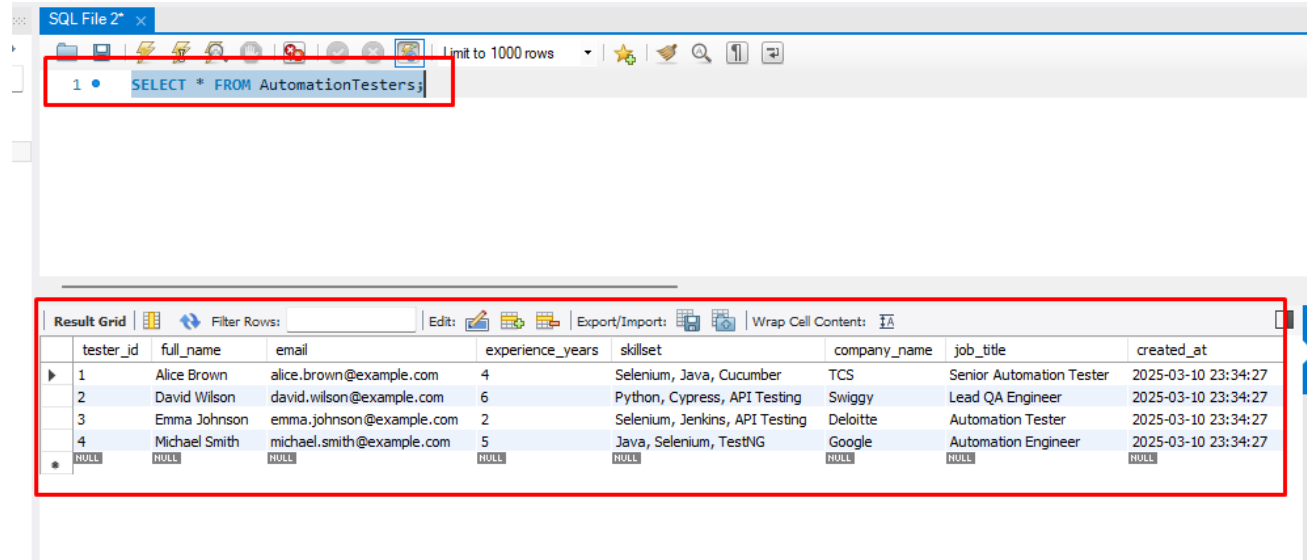
3) How to fetch your SQL Data records ?

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Using Select Query as below :

```
SELECT * FROM AutomationTesters;
```



The screenshot shows a SQL client window titled 'SQL File 2*'. The query editor contains the query 'SELECT * FROM AutomationTesters;'. Below the editor, the 'Result Grid' displays the results of the query. The grid has columns for 'tester_id', 'full_name', 'email', 'experience_years', 'skillset', 'company_name', 'job_title', and 'created_at'. There are four data rows and one row for null values.

tester_id	full_name	email	experience_years	skillset	company_name	job_title	created_at
1	Alice Brown	alice.brown@example.com	4	Selenium, Java, Cucumber	TCS	Senior Automation Tester	2025-03-10 23:34:27
2	David Wilson	david.wilson@example.com	6	Python, Cypress, API Testing	Swiggy	Lead QA Engineer	2025-03-10 23:34:27
3	Emma Johnson	emma.johnson@example.com	2	Selenium, Jenkins, API Testing	Deloitte	Automation Tester	2025-03-10 23:34:27
4	Michael Smith	michael.smith@example.com	5	Java, Selenium, TestNG	Google	Automation Engineer	2025-03-10 23:34:27
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

4) Database testing with Selenium – JDBC Connection

Note:

Selenium is not required for Database testing but what we actually do in real time scenarios . Suppose requirement is –

- 1) we need to create user from frontend and need to verify in database that user is created successfully or not in database**
- 2) Delete user from using delete account functionality & verify in database if user is deleted or not**
- 3) Update user info from using update account functionality & verify in database if user info is updated or not.**

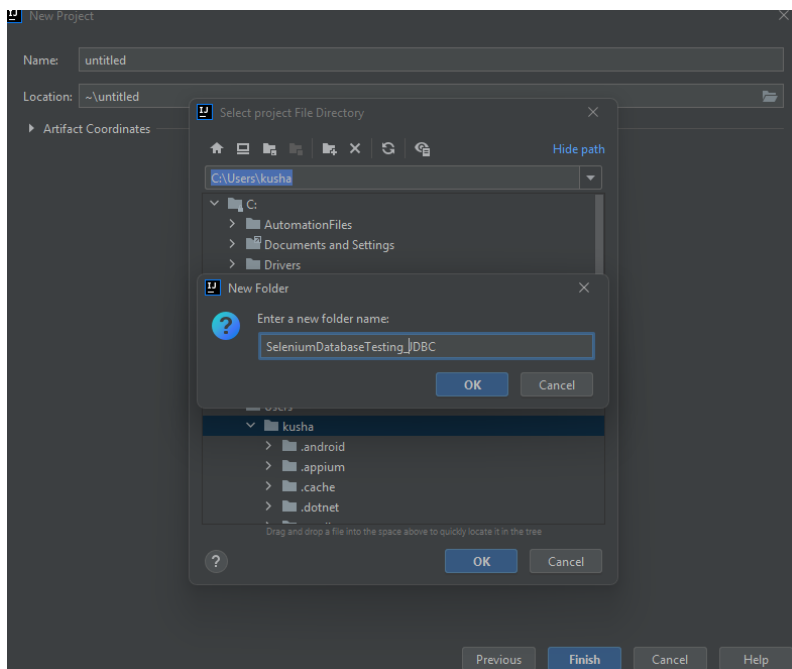
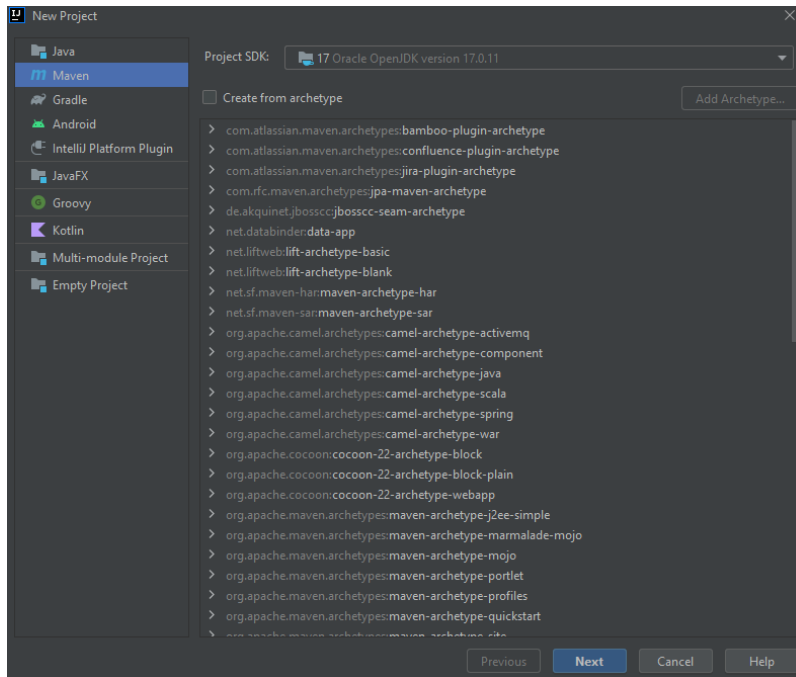
SO DON'T CONFUSE WITH SELENIUM IS REQUIRED FOR DATABASE TESTING

1) Prerequisites Steps :

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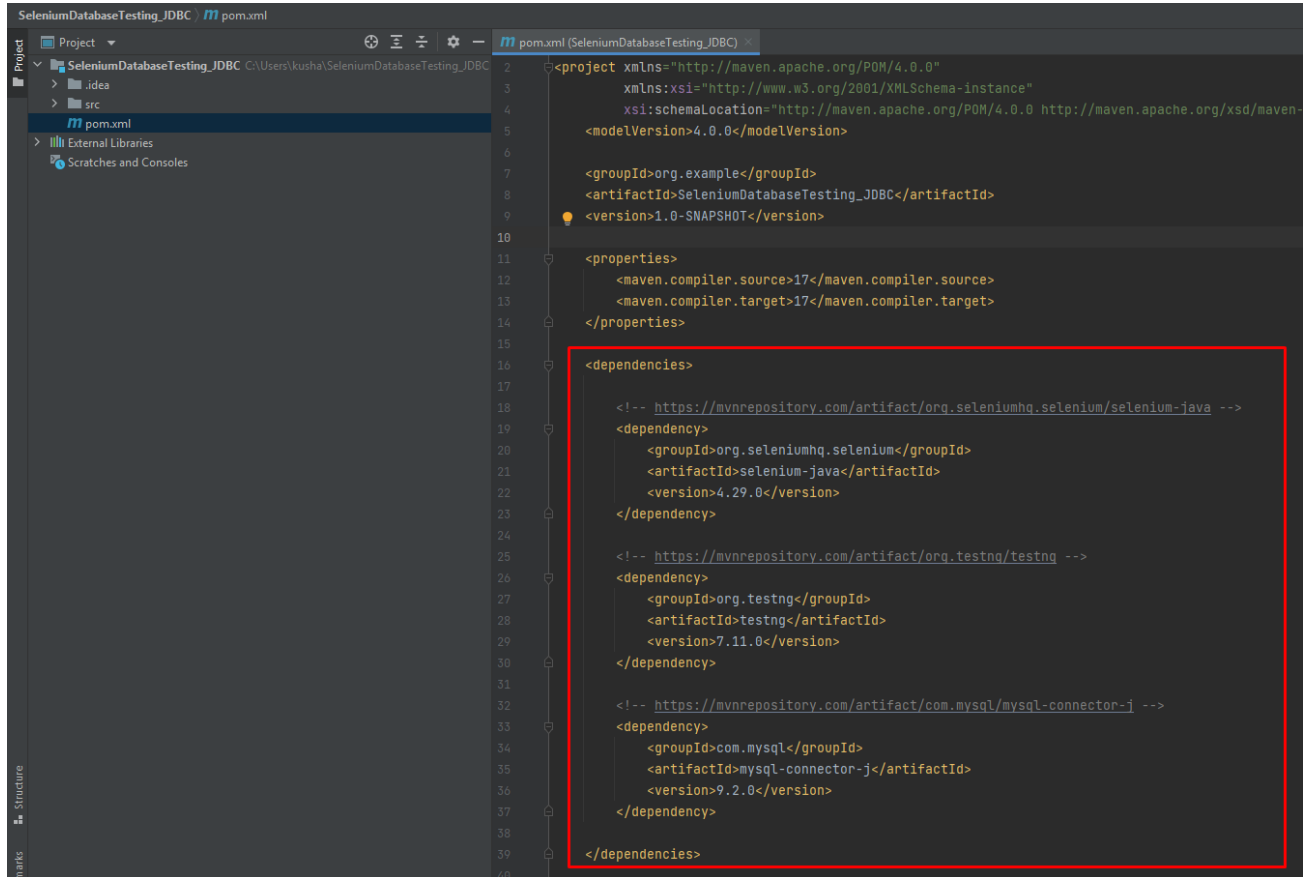
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- Open any IDE , Create Maven Project & add required dependencies as below



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```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <project xmlns="http://maven.apache.org/POM/4.0.0"
3         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
4         xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-
5         <modelVersion>4.0.0</modelVersion>
6
7         <groupId>org.example</groupId>
8         <artifactId>SeleniumDatabaseTesting_JDBC</artifactId>
9         <version>1.0-SNAPSHOT</version>
10
11         <properties>
12             <maven.compiler.source>17</maven.compiler.source>
13             <maven.compiler.target>17</maven.compiler.target>
14         </properties>
15
16         <dependencies>
17
18             <!-- https://mvnrepository.com/artifact/org.seleniumhq.selenium/selenium-java -->
19             <dependency>
20                 <groupId>org.seleniumhq.selenium</groupId>
21                 <artifactId>selenium-java</artifactId>
22                 <version>4.29.0</version>
23             </dependency>
24
25             <!-- https://mvnrepository.com/artifact/org.testng/testng -->
26             <dependency>
27                 <groupId>org.testng</groupId>
28                 <artifactId>testng</artifactId>
29                 <version>7.11.0</version>
30             </dependency>
31
32             <!-- https://mvnrepository.com/artifact/com.mysql/mysql-connector-j -->
33             <dependency>
34                 <groupId>com.mysql</groupId>
35                 <artifactId>mysql-connector-j</artifactId>
36                 <version>9.2.0</version>
37             </dependency>
38
39         </dependencies>
40     </project>
```

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Add below dependencies in POM File :-

<dependencies>

<!-- https://mvnrepository.com/artifact/org.seleniumhq.selenium/selenium-java -->

<dependency>

<groupId>org.seleniumhq.selenium</groupId>

<artifactId>selenium-java</artifactId>

<version>4.29.0</version>

</dependency>

<!-- https://mvnrepository.com/artifact/org.testng/testng -->

<dependency>

<groupId>org.testng</groupId>

<artifactId>testng</artifactId>

<version>7.11.0</version>

</dependency>

<!-- https://mvnrepository.com/artifact/com.mysql/mysql-connector-j -->

<dependency>

<groupId>com.mysql</groupId>

<artifactId>mysql-connector-j</artifactId>

<version>9.2.0</version>

</dependency>

</dependencies>

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2) Test Scenarios :

- Create a new user (automation tester user) from frontend using Selenium (Java)
- Verify user is created or not by fetching the data from SQL database server

Code :-

```
import org.testng.annotations.Test;

import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;

public class DatabaseTesting {

    @Test    public void CreateUser_Test(){

        System.out.println("Creating User using Selenium from frontend...");

        System.out.println("-----");

        System.out.println("Fetching Data to verify if user is created successfully or not ...");

        // Database connection details
        String url = "jdbc:mysql://localhost:3306/qa_demo"; // Update DB name if different
        String user = "root"; // Change if different
        String password = "Kush@123"; // Change if different

        // SQL Query to fetch all records
        String query = "SELECT * FROM AutomationTesters";

        // Establish Connection
        try (Connection con = DriverManager.getConnection(url, user, password);
            Statement stmt = con.createStatement();
            ResultSet rs = stmt.executeQuery(query)) {

            // Display Column Headers
            System.out.printf("%-5s %-20s %-30s %-5s %-40s %-20s %-25s %-20s%n",
                "ID", "Full Name", "Email", "Exp", "Skillset", "Company", "Job Title", "Created At");
            System.out.println("-----");

            // Iterate over the result set
            while (rs.next()) {
                int id = rs.getInt("tester_id");
                String fullName = rs.getString("full_name");
                String email = rs.getString("email");
```

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```
int experience = rs.getInt("experience_years");
String skillset = rs.getString("skillset");
String company = rs.getString("company_name");
String jobTitle = rs.getString("job_title");
String createdAt = rs.getString("created_at");

// Print each row
System.out.printf("%-5d %-20s %-30s %-5d %-40s %-20s %-25s %-20s\n",
    id, fullName, email, experience, skillset, company, jobTitle, createdAt);
}

} catch (Exception e) {
    e.printStackTrace();
}

}
```

Output :-

```
Creating User using Selenium from frontend....
-----
Fetching Data to verify if user is created successfully or not ...
Mar 11, 2025 12:17:38 AM io.opentelemetry.api.GlobalOpenTelemetry maybeAutoConfigureAndSetGlobal
INFO: AutoConfiguredOpenTelemetrySdk found on classpath but automatic configuration is disabled. To enable, run your JVM with -Dotel.java.global-autoconfigure.enabled=true
ID    Full Name    Email                Exp    Skillset                Company    Job Title    Created At
-----
1     Alice Brown    alice.brown@example.com    4     Selenium, Java, Cucumber    TCS        Senior Automation Tester    2025-03-10 23:34:27
2     David Wilson    david.wilson@example.com    6     Python, Cypress, API Testing    Swiggy     Lead QA Engineer    2025-03-10 23:34:27
3     Emma Johnson    emma.johnson@example.com    2     Selenium, Jenkins, API Testing    Deloitte    Automation Tester    2025-03-10 23:34:27
4     Michael Smith    michael.smith@example.com    5     Java, Selenium, TestNG    Google     Automation Engineer    2025-03-10 23:34:27
=====
Default Suite
Total tests run: 1, Passes: 1, Failures: 0, Skips: 0
=====
```

The screenshot shows an IDE window titled 'Run: DatabaseTesting'. The left sidebar displays a test suite tree with 'Default Suite' expanded, showing 'SeleniumDatabaseTesting_JDBC' and 'DatabaseTesting', with 'CreateUser_Test' selected. The main area shows the test output, which matches the output shown in the previous block, including the table of user data and the 'Default Suite' summary. The output ends with 'Process finished with exit code 0'.

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