Lab-09: Lab Manual: Installing Node.js on Windows and Using it in VS and Installing MySQL and MySQL in VS Code

Lab Objective

The purpose of this lab is to guide you through the installation and initial setup of Node.js, a JavaScript runtime environment, on major operating systems. By the end of this lab, you will have Node.js installed, verified, and ready for basic use, including running a simple "Hello World" script using VS Code.

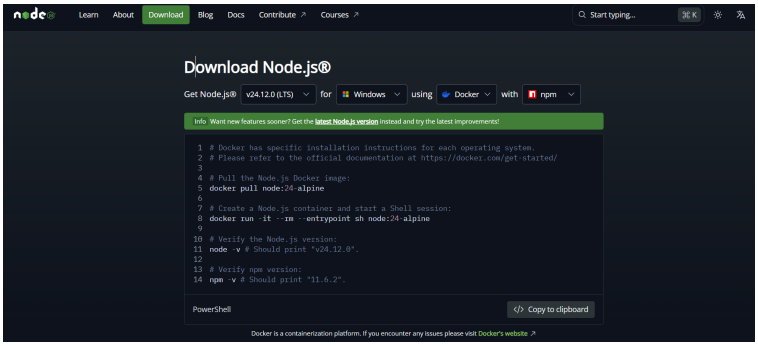
CLO: Set: Prepare coding environments, select design approaches, and demonstrate readiness for development.

Software Requirements

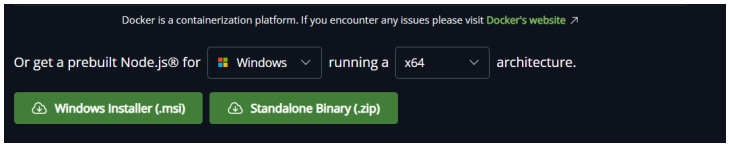
- Windows 10 or later
- Internet connection
- Web browser
- Visual Studio Code
- Basic familiarity with using a command-line interface (Command Prompt on Windows, Terminal on macOS/Linux).

Part A: Installing Node.js

1. Visit https://nodejs.org



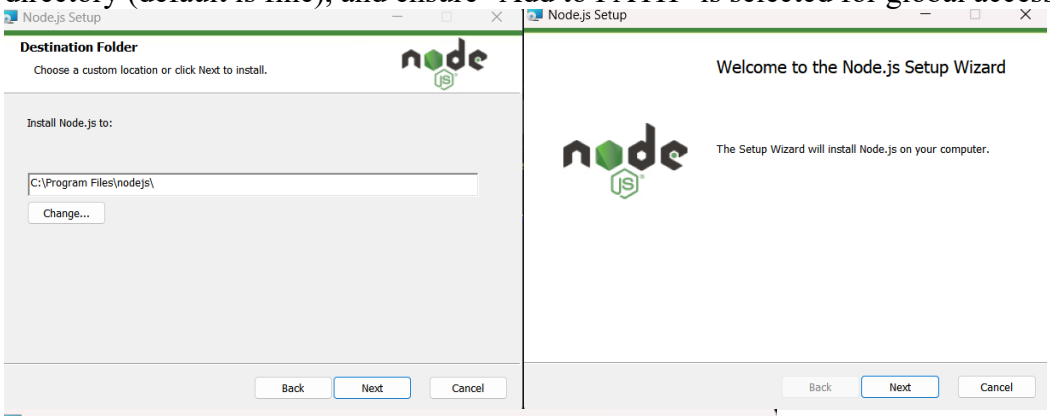
2. Download the LTS version

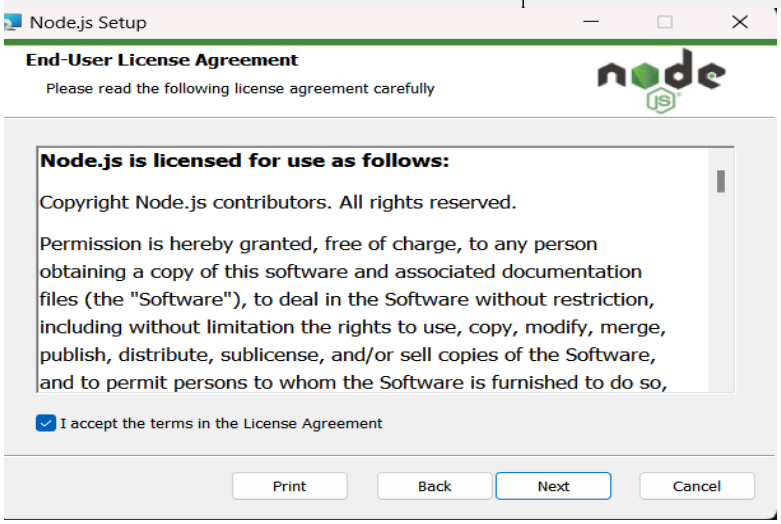


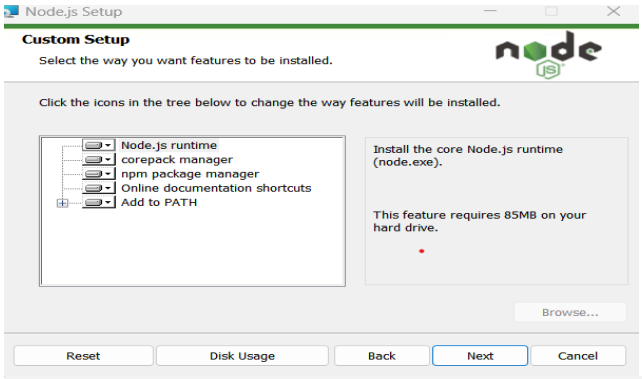
3. Download the .msi file.

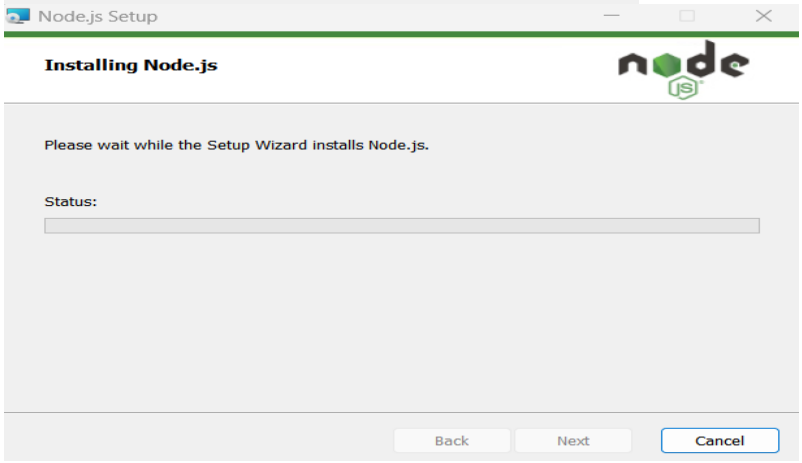
4. Double-click the downloaded file to launch the installer.

5. Follow the setup wizard: Accept the license agreement, choose the installation directory (default is fine), and ensure "Add to PATH" is selected for global access.

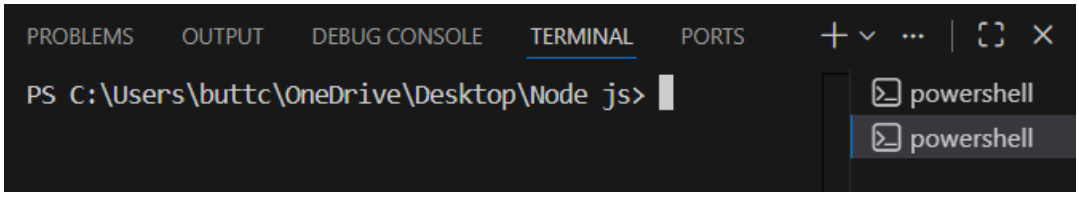




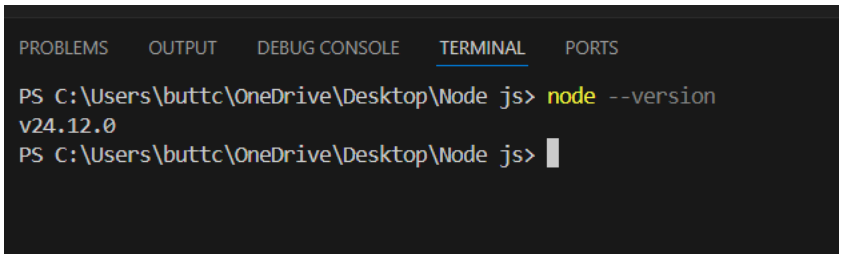




6. Click "Install" and grant administrative permissions if prompted.
7. Once complete, click "Finish."Verify Installation, Open VS Code, Open new terminal:



Or Open Command Prompt and run the following commands:
node -v
npm -v

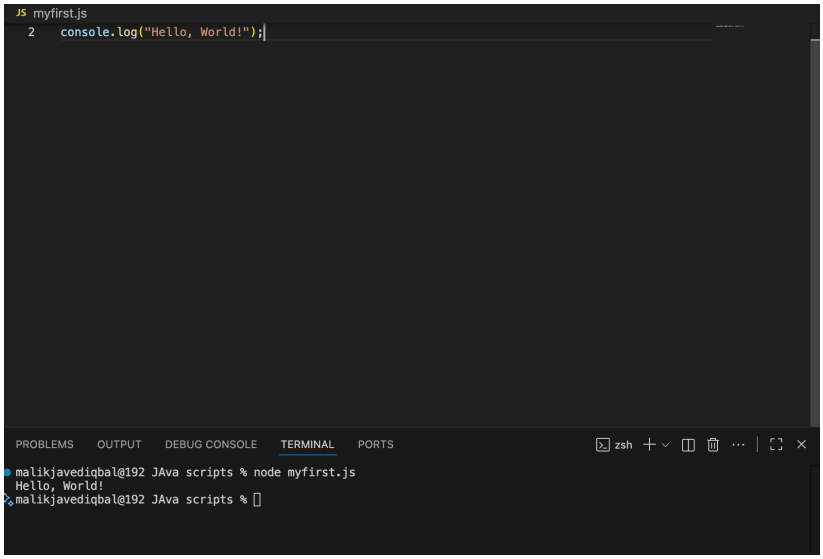


Part B: Install Visual Studio Code (If VS Code is not installed)

1. Visit https://code.visualstudio.com
2. Download and install Visual Studio Code using default options

Part C: Using Node.js in VS Code

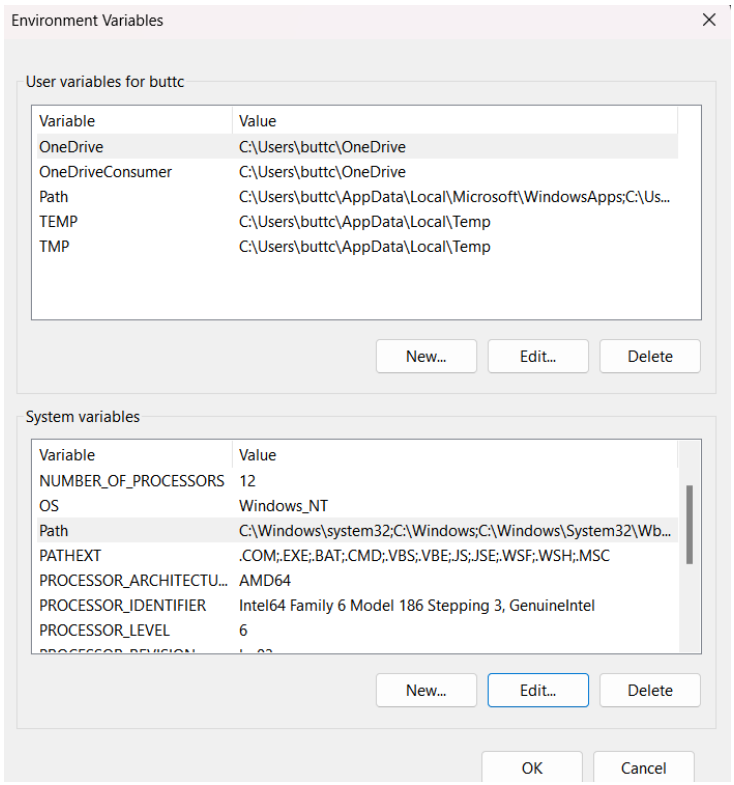
1. Open Visual Studio Code
   2. Open a folder named node_lab
   3. Create a file named app.js
   4. Add the code: console.log("Hello Node.js")
   5. Open the terminal and run: node app.js



Troubleshooting

If the commands don't work:

- Restart your terminal/command prompt.
- Make sure Node.js was added to your system's PATH during installation.



- On Windows, you might need to restart your computer.

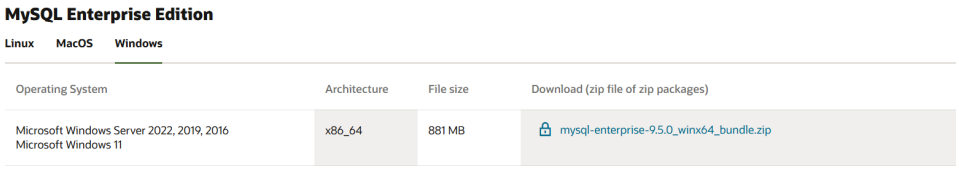
Installation and Setup Guide: MySQL with Node.js in Visual Studio Code

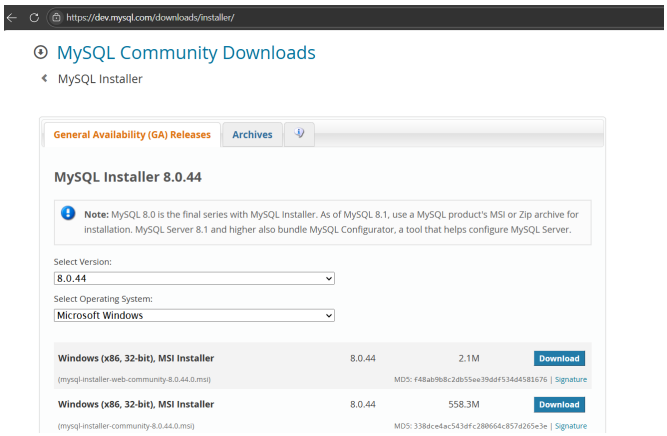
Lab Objective:

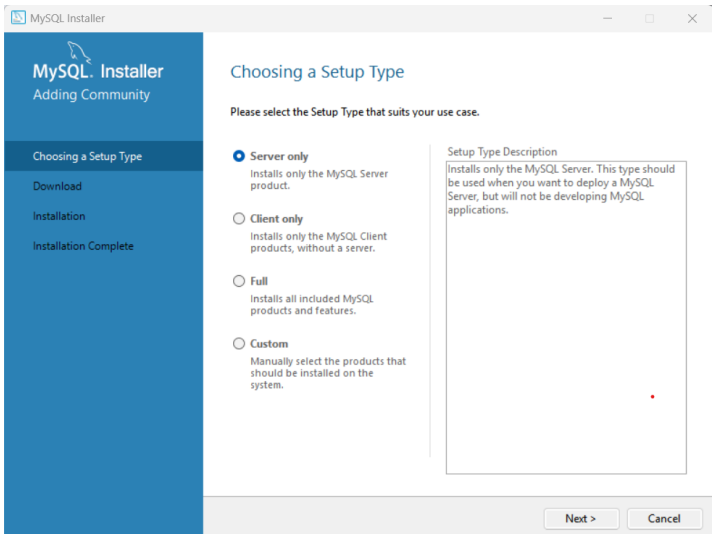
This guide walks you through installing MySQL Community Server, setting it up for use with a Node.js application, integrating it in Visual Studio Code (VS Code), and creating a basic connection using the mysql2 package. By the end, you'll have a working Node.js project that connects to a local MySQL database and performs simple queries.

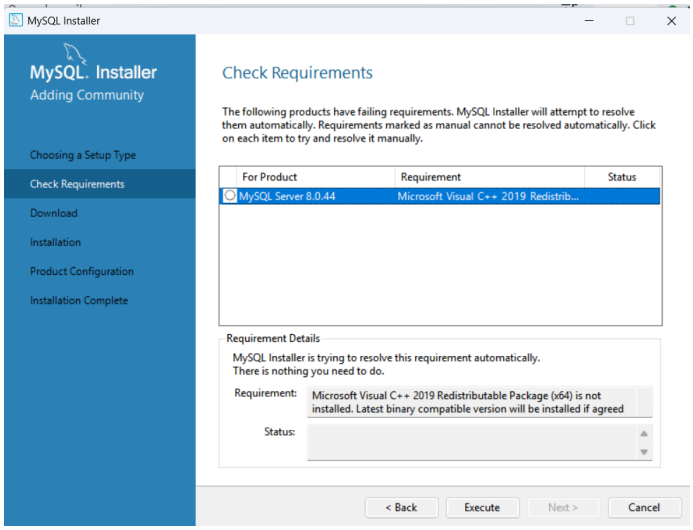
Step 1: Install MySQL Community Server

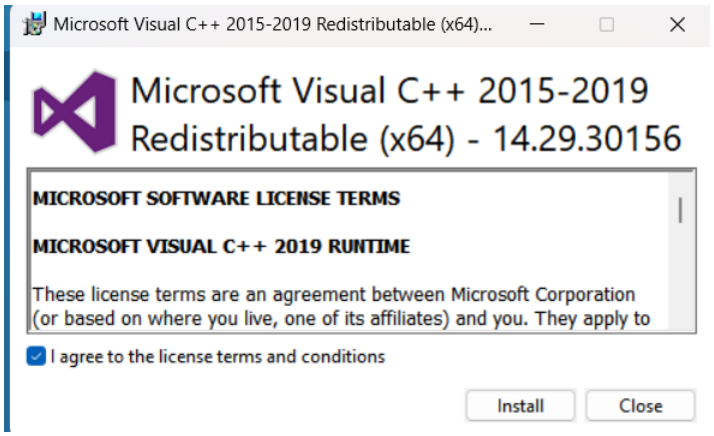
1. Visit the official download page: MySQL :: Download MySQL Installer
2. Choose MySQL Enterprise Edition
3. Select Windows as operating system.
4. Download zip setup.
5. You may need signing (if already exists) or signup on Oracle. After initial verification, download will start.

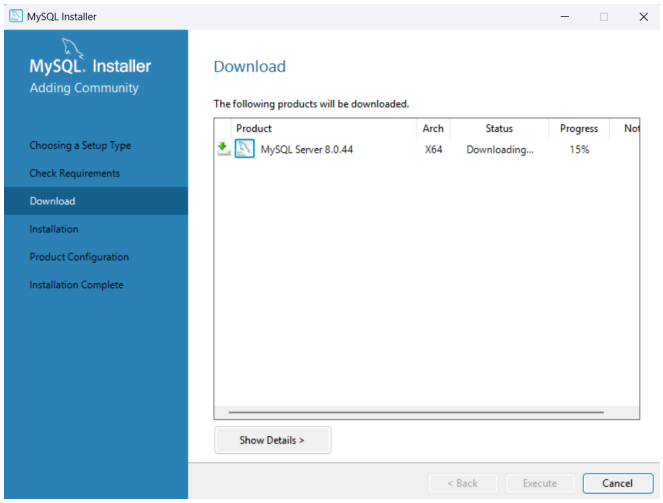


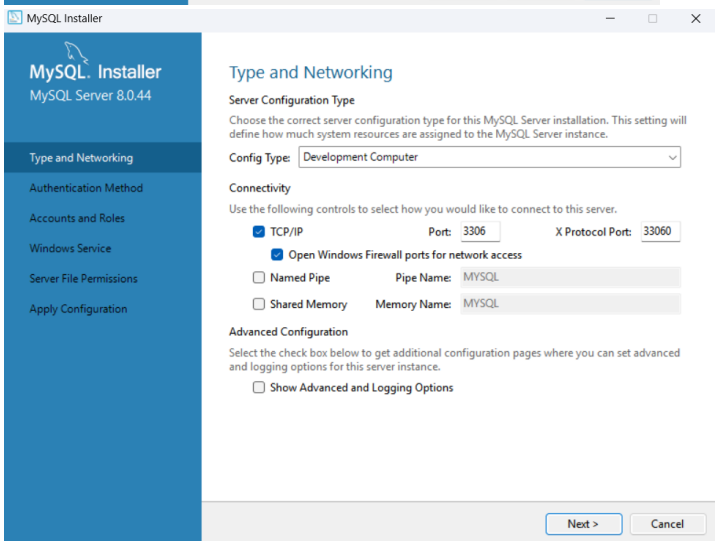

https://dev.mysql.com/downloads/installer/
MySQL Community Downloads
MySQL Installer
General Availability (GA) Releases
Archives
MySQL Installer 8.0.44
Note: MySQL 8.0 is the final series with MySQL Installer. As of MySQL 8.1, use a MySQL product's MSI or Zip archive for installation. MySQL Server 8.1 and higher also bundle MySQL Configurator, a tool that helps configure MySQL Server.
Select Version:
8.0.44
Select Operating System:
Microsoft Windows
Windows (x86, 32-bit), MSI Installer
8.0.44
2.1M
Download
(mysql-installer-web-community-8.0.44.0.msi)
MD5: f48ab9b8c2db55ee39ddf534d4581676 | Signature
Windows (x86, 32-bit), MSI Installer
8.0.44
558.3M
Download
(mysql-installer-community-8.0.44.0.msi)
MD5: 338dce4ac543efc280664c857d265e3e | Signature

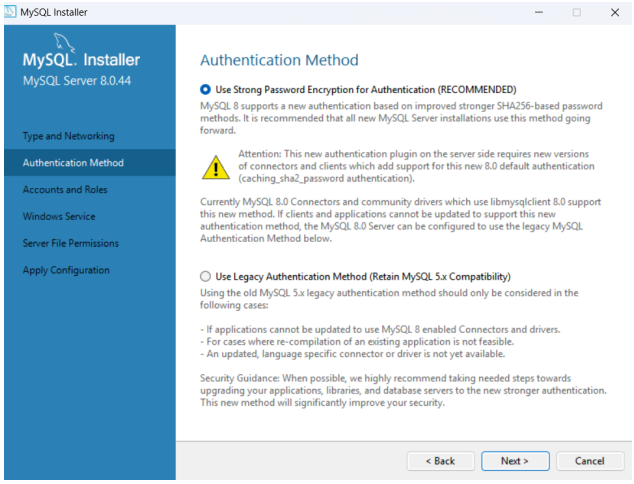

MySQL Installer
MySQL. Installer
Adding Community
Choosing a Setup Type
Download
Installation
Installation Complete
Choosing a Setup Type
Please select the Setup Type that suits your use case.
Server only
Installs only the MySQL Server product.
Client only
Installs only the MySQL Client products, without a server.
Full
Installs all included MySQL products and features.
Custom
Manually select the products that should be installed on the system.
Setup Type Description
Installs only the MySQL Server. This type should be used when you want to deploy a MySQL Server, but will not be developing MySQL applications.
Next >
Cancel

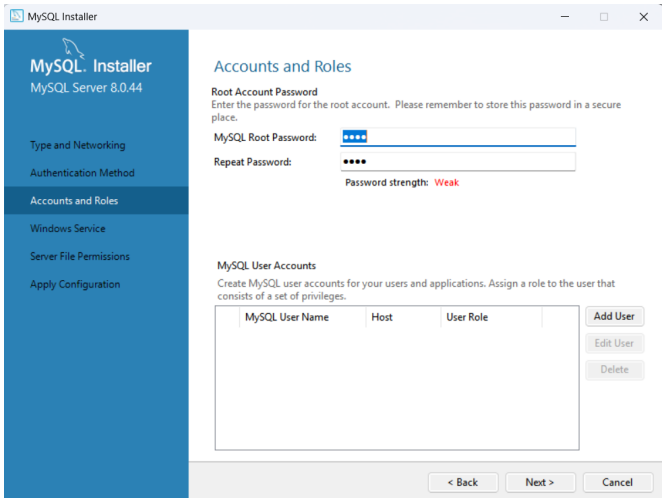

MySQL Installer
MySQL. Installer
Adding Community
Choosing a Setup Type
Check Requirements
Download
Installation
Product Configuration
Installation Complete
Check Requirements
The following products have failing requirements. MySQL Installer will attempt to resolve them automatically. Requirements marked as manual cannot be resolved automatically. Click on each item to try and resolve it manually.
For Product
Requirement
Status
MySQL Server 8.0.44
Microsoft Visual C++ 2019 Redistrib...
Requirement Details
MySQL Installer is trying to resolve this requirement automatically.
There is nothing you need to do.
Requirement:
Microsoft Visual C++ 2019 Redistributable Package (x64) is not installed. Latest binary compatible version will be installed if agreed
Status:
< Back
Execute
Next >
Cancel

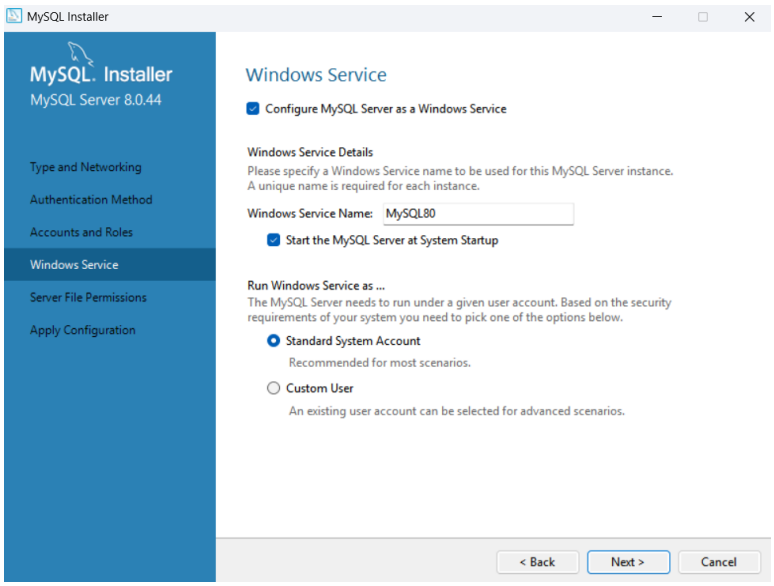

Microsoft Visual C++ 2015-2019 Redistributable (x64)...
Microsoft Visual C++ 2015-2019 Redistributable (x64) - 14.29.30156
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT VISUAL C++ 2019 RUNTIME
These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. They apply to
I agree to the license terms and conditions
Install
Close

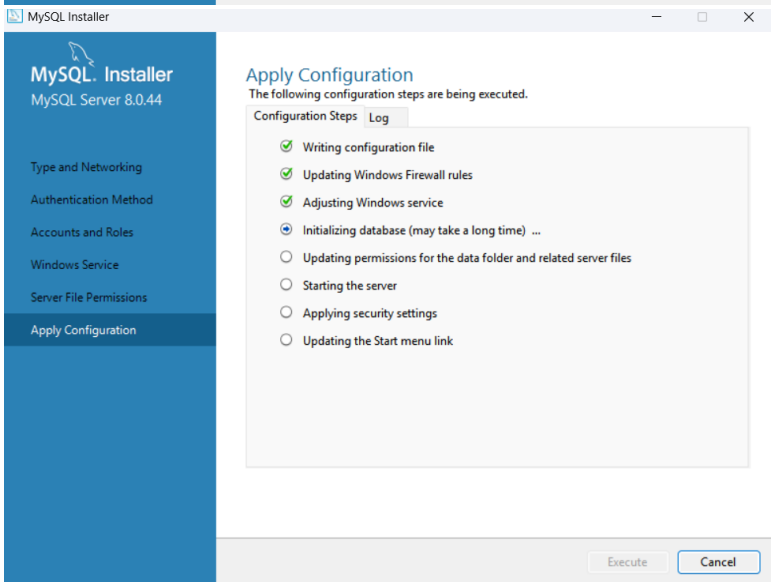

MySQL Installer
MySQL. Installer
Adding Community
Choosing a Setup Type
Check Requirements
Download
Installation
Product Configuration
Installation Complete
Download
The following products will be downloaded.
Product
Arch
Status
Progress
MySQL Server 8.0.44
X64
Downloading...
15%
Show Details >
< Back
Execute
Cancel


MySQL Installer
MySQL. Installer
MySQL Server 8.0.44
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Server File Permissions
Apply Configuration
Type and Networking
Server Configuration Type
Choose the correct server configuration type for this MySQL Server installation. This setting will define how much system resources are assigned to the MySQL Server instance.
Config Type: Development Computer
Connectivity
Use the following controls to select how you would like to connect to this server.
TCP/IP
Port: 3306
X Protocol Port: 33060
Open Windows Firewall ports for network access
Named Pipe
Pipe Name: MYSQL
Shared Memory
Memory Name: MYSQL
Advanced Configuration
Select the check box below to get additional configuration pages where you can set advanced and logging options for this server instance.
Show Advanced and Logging Options
Next >
Cancel


MySQL Installer
MySQL. Installer
MySQL Server 8.0.44
Type and Networking
Authentication Method
Accounts and Roles
Windows Service
Server File Permissions
Apply Configuration
Authentication Method
Use Strong Password Encryption for Authentication (RECOMMENDED)
MySQL 8 supports a new authentication based on improved stronger SHA256-based password methods. It is recommended that all new MySQL Server installations use this method going forward.
Attention: This new authentication plugin on the server side requires new versions of connectors and clients which add support for this new 8.0 default authentication (caching_sha2_password authentication).
Currently MySQL 8.0 Connectors and community drivers which use libmysqlclient 8.0 support this new method. If clients and applications cannot be updated to support this new authentication method, the MySQL 8.0 Server can be configured to use the legacy MySQL Authentication Method below.
Use Legacy Authentication Method (Retain MySQL 5.x Compatibility)
Using the old MySQL 5.x legacy authentication method should only be considered in the following cases:
- If applications cannot be updated to use MySQL 8 enabled Connectors and drivers.
- For cases where re-compilation of an existing application is not feasible.
- An updated, language specific connector or driver is not yet available.
Security Guidance: When possible, we highly recommend taking needed steps towards upgrading your applications, libraries, and database servers to the new stronger authentication. This new method will significantly improve your security.
< Back
Next >
Cancel


MySQL Installer
MySQL. Installer
MySQL Server 8.0.44
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:
Password strength: Weak
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





STEP2: Verify:

Open a terminal window:

- Press Windows key, type cmd → open **Command Prompt**,
- In the terminal, type the following command and press Enter:

```
mysql --version
```

- (You can also use the shorter form: mysql -V)
- Either my sql version is shown or an error like:

```
malikjavediqbal@192 ~ % mysql -V
zsh: command not found: mysql
```

- **add MySQL to PATH (if already installed)**

1. Open **Start Menu**
2. Search: **Environment Variables**
3. Click: **Edit the system environment variables**
4. Click: **Environment Variables**
5. Under **System variables**, select **Path**
6. Click **Edit**
7. Click **New**
8. Paste the MySQL bin path, e.g.:

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

9. Click **OK → OK → OK**
10. Restart Terminal

11. Close and reopen:

- **Command Prompt** or **PowerShell**

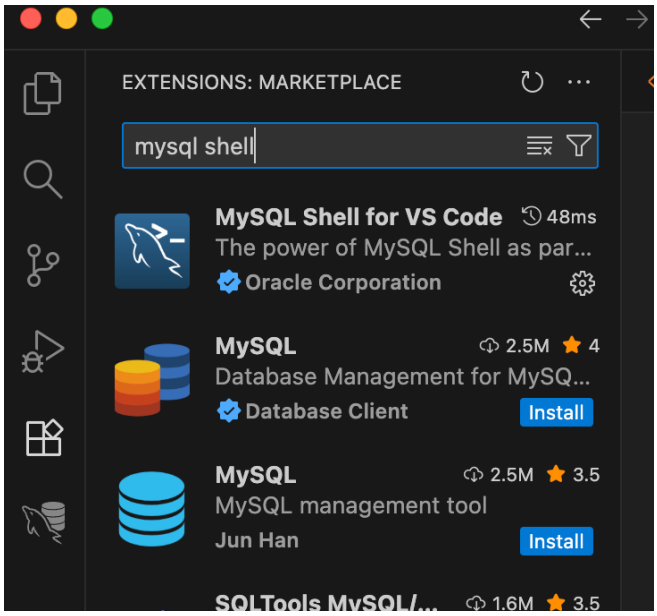
12. Now check again:

```
mysql -V
```

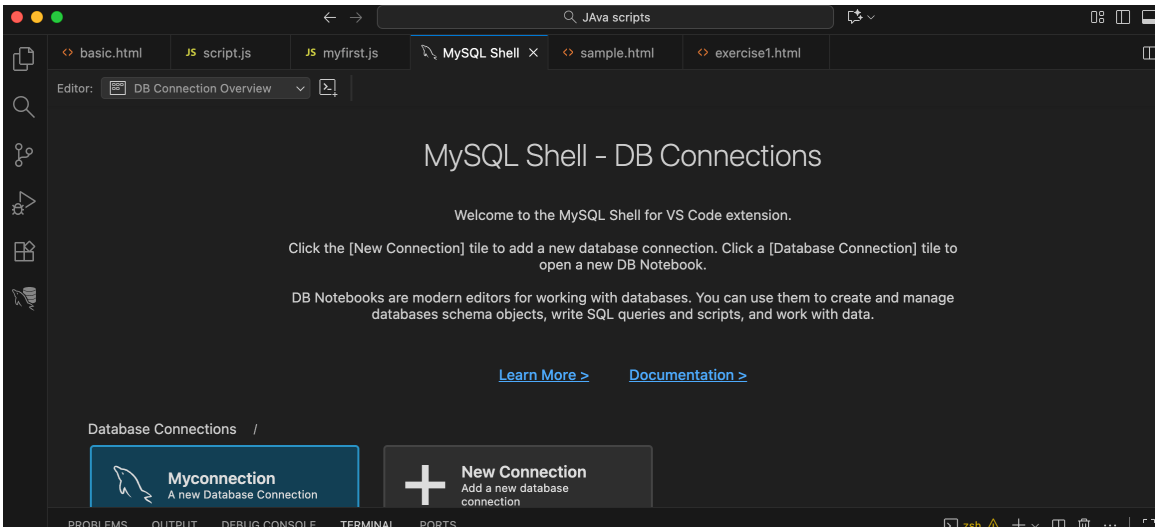
Step 3: Set Up VS Code for MySQL Management

VS Code does not include built-in MySQL server management, but extensions allow you to connect and query databases directly.

Recommended Extension: **MySQL Shell for VS Code** (official from Oracle) – Provides advanced features like notebooks, scripting, and schema browsing.



1. Open VS Code.
2. Go to Extensions view (Ctrl+Shift+X).
3. Search for "MySQL Shell for VS Code" and install it.
4. Reload VS Code if prompted.
5. In the extension panel (MySQL icon in sidebar), add a new connection:
    - Host: localhost
    - User: root
    - Password: Your root password
    - Port: 3306 (default)



6. Test the connection – you can now run queries directly in VS Code.

Installation Steps for MySQL Workbench on Windows

MySQL Workbench is a free, official visual tool from Oracle for designing, managing, and querying MySQL databases. It works independently of MySQL Server (you can connect to local or remote servers), but installation is often bundled.

There are two main ways to install it on Windows. **Method 1 (Recommended)** uses the MySQL Installer for easier management and updates. **Method 2** uses the standalone MSI for a quicker install without extras.

Prerequisites

- Windows 10 or 11 (64-bit recommended).
- Administrator privileges.
- Microsoft Visual C++ Redistributable (usually installed automatically).
- Internet connection for download.

Method 1: Using MySQL Installer (Recommended)

This method installs and manages MySQL products easily, including future updates.

1. Go to the official download page: https://dev.mysql.com/downloads/workbench/
2. Select **Windows** as the platform.
3. Download the **MySQL Installer for Windows** (the larger file, e.g., "mysql-installer-community-8.0.45.msi" or similar).
    - No Oracle account is required; click "No thanks, just start my download" if prompted.
4. Run the downloaded .msi file (double-click it).
5. In the MySQL Installer wizard:
    - Choose **Custom** setup type (to select only Workbench if desired).
    - In the "Select Products" screen:
        - Expand **Applications** > **MySQL Workbench**.
        - Select the latest MySQL Workbench version (e.g., 8.0.45).
        - Optionally add other tools like MySQL Shell.
    - Click **Next**.
6. Review requirements (it will download any missing prerequisites like Visual C++).
7. Click **Execute** to download and install selected components.
8. Once complete, click **Next** > **Finish**.

MySQL Workbench is now installed!

Launching MySQL Workbench

- Search for "MySQL Workbench" in the Windows Start menu.
- Or navigate to: Start > All Programs > MySQL > MySQL Workbench.
- On first launch, create a new connection:
    - Click the "+" next to "MySQL Connections".

- Hostname: localhost (or remote IP).
- Port: 3306.
- Username: root (or your user).
- Test the connection.

Verification

- Open MySQL Workbench.
- If it launches and you can create/query databases, it's successful.
- Check version: Help > About MySQL Workbench.

Lab task : Install Node js, MySQL and MySQL workbench on your systems using the step by step guideline provided in manual until next week lab.

Evaluation rubrics:

No	Metric	Marks
1	Node js is installed and accessible in VS code	2
2	MySQL is installed, and required extensions in VS code	2
3	MySQL Workbench in installed	1
Total	5	