SOFTWARE ENGINEERING WEEK 2 ASSIGNMENT 1

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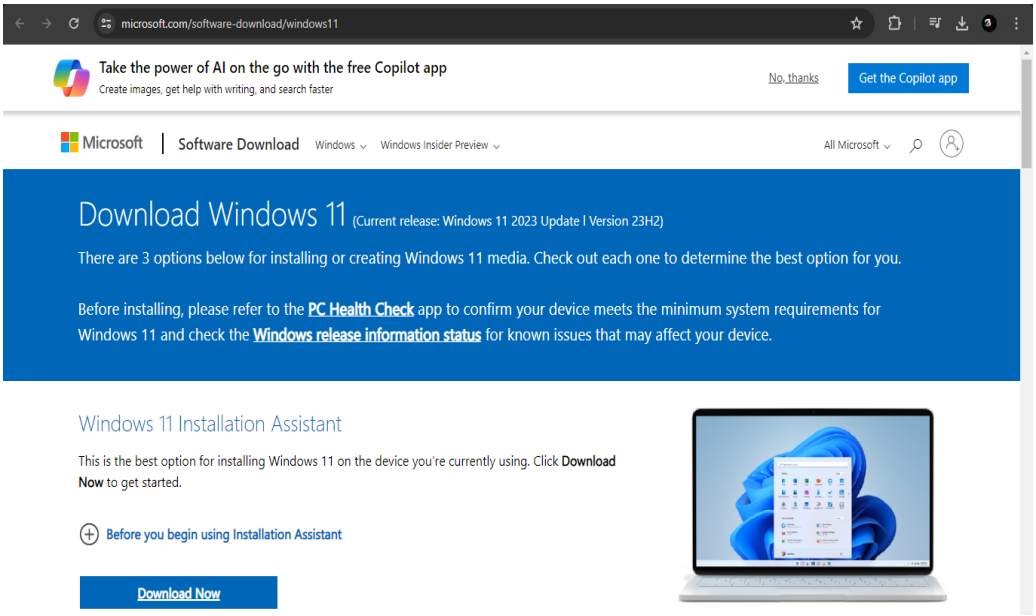
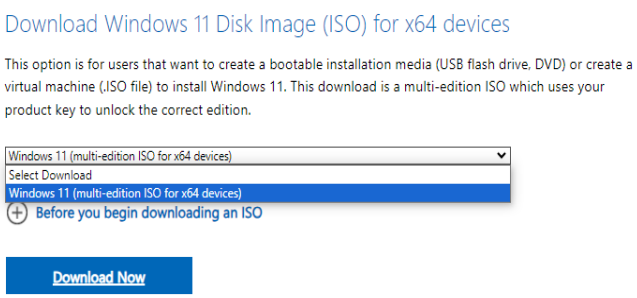
DEVELOPER ENVIRONMENT SETUP DOCUMENT

OPERATING SYSTEM INSTALLATION

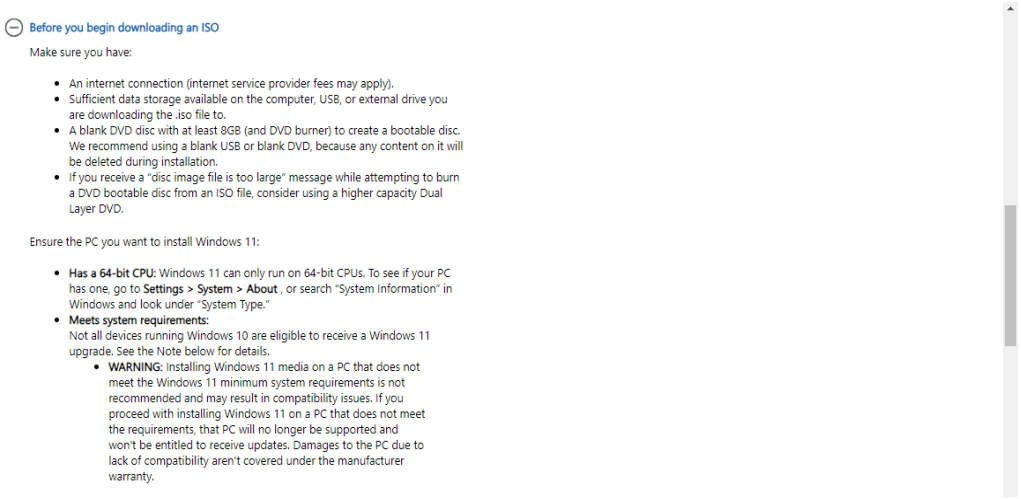
1. Download Windows 11 Disk Image (ISO) for x64 devices:
    - Go to the official Microsoft Windows 11 download Page. Here is the link https://www.microsoft.com/software-download/windows11 . You will see a window as shown below.



    - Scroll down to the Third option which says “Download Windows 11 Disk Image (ISO) for x64 devices” . This option is for users that want to create a bootable installation media (USB flash drive, DVD) or create a virtual machine (.ISO file) to install Windows 11. Then in the dropdown select download, select windows 11(multi-edition ISO for x64 devices) as shown below



- Please make sure you click before you begin downloading an ISO and read the content in the dropdown to ensure you meet all requirements and also your PC meets requirement for download and installation of windows 11 as shown below



Before you begin downloading an ISO

Make sure you have:

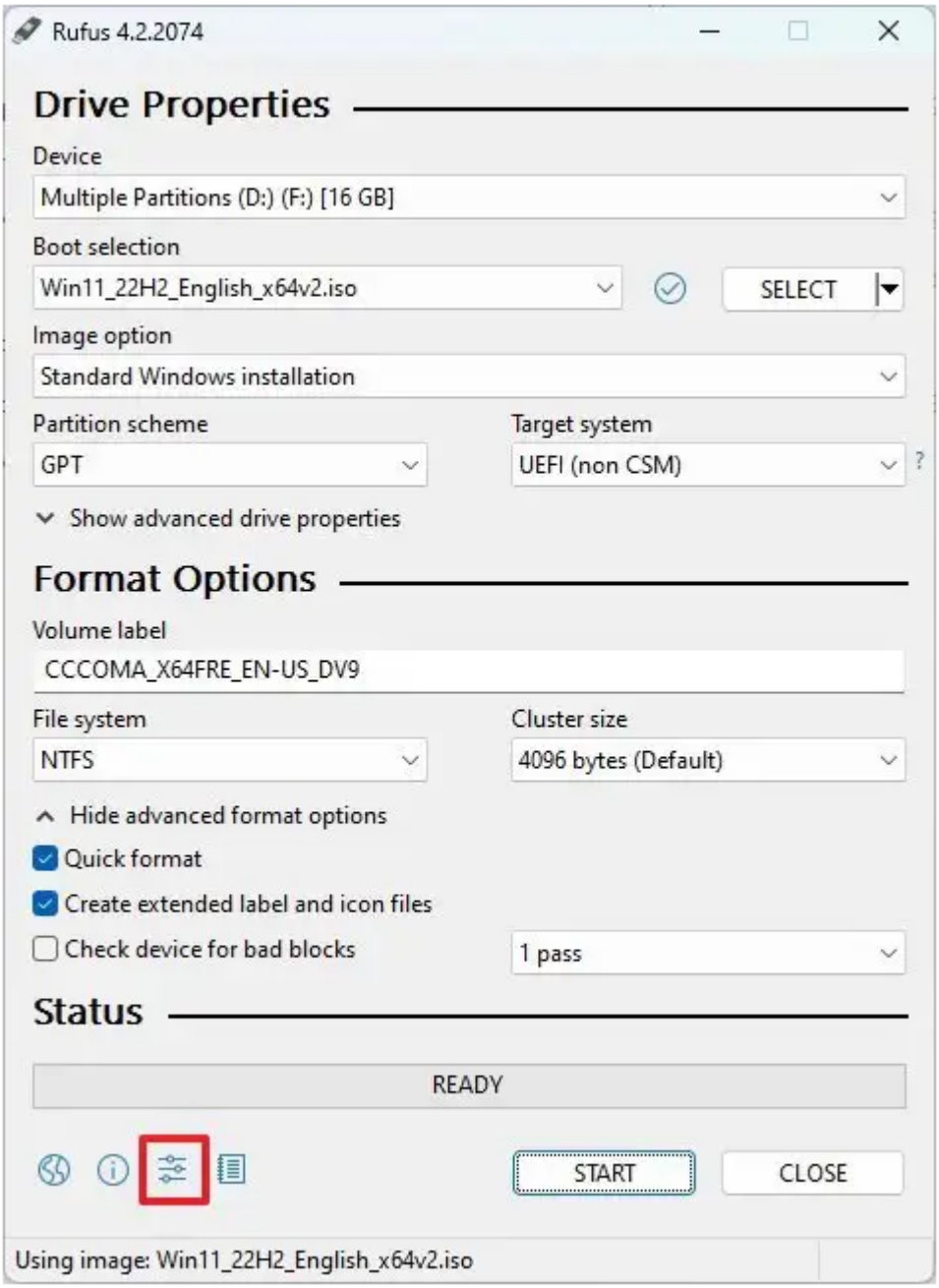
- An internet connection (internet service provider fees may apply).
- Sufficient data storage available on the computer, USB, or external drive you are downloading the .iso file to.
- A blank DVD disc with at least 8GB (and DVD burner) to create a bootable disc. We recommend using a blank USB or blank DVD, because any content on it will be deleted during installation.
- If you receive a "disc image file is too large" message while attempting to burn a DVD bootable disc from an ISO file, consider using a higher capacity Dual Layer DVD.

Ensure the PC you want to install Windows 11:

- **Has a 64-bit CPU:** Windows 11 can only run on 64-bit CPUs. To see if your PC has one, go to **Settings > System > About** , or search "System Information" in Windows and look under "System Type."
- **Meets system requirements:**
  Not all devices running Windows 10 are eligible to receive a Windows 11 upgrade. See the Note below for details.
  - **WARNING:** Installing Windows 11 media on a PC that does not meet the Windows 11 minimum system requirements is not recommended and may result in compatibility issues. If you proceed with installing Windows 11 on a PC that does not meet the requirements, that PC will no longer be supported and won't be entitled to receive updates. Damages to the PC due to lack of compatibility aren't covered under the manufacturer warranty.

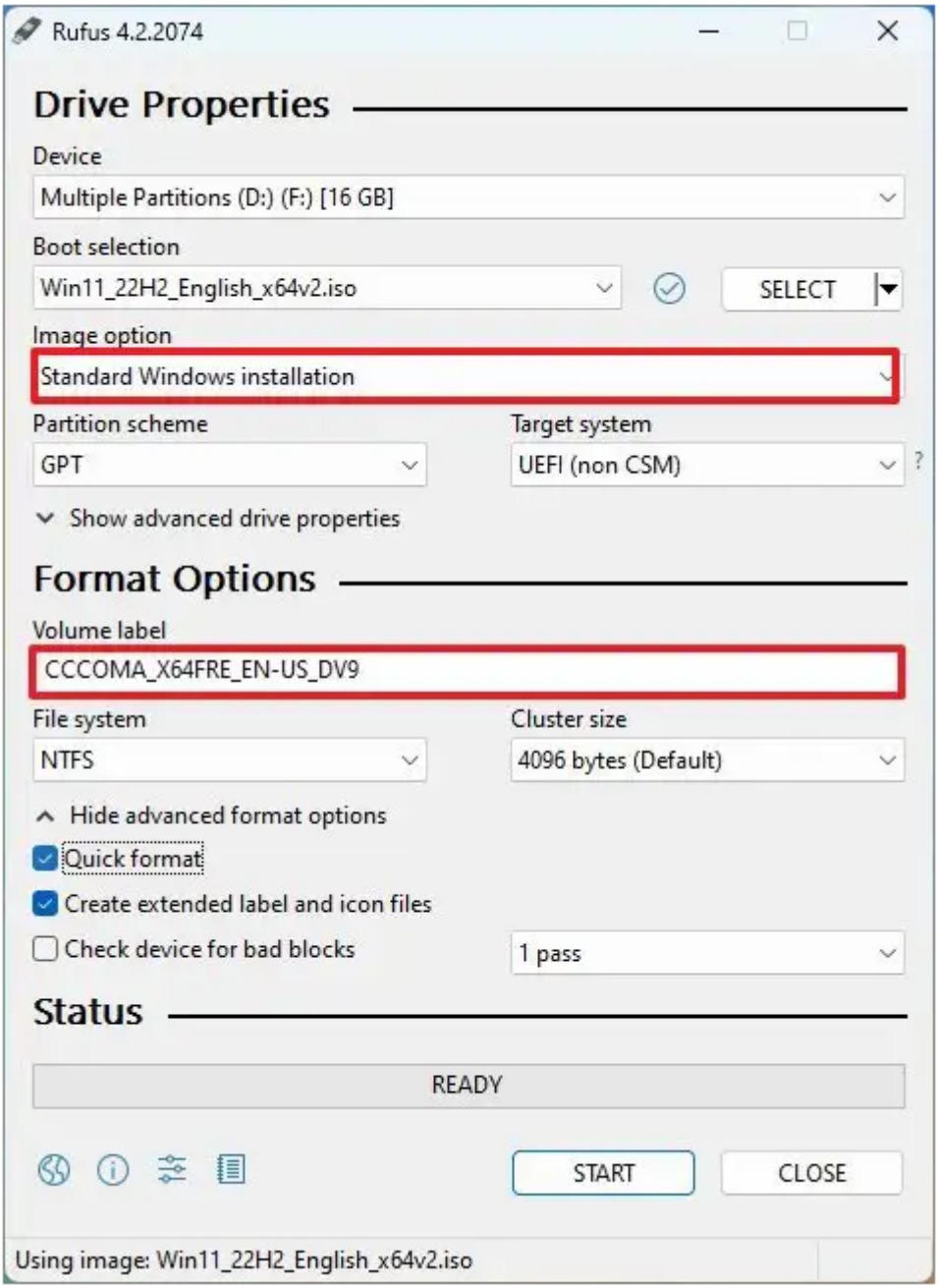
- Once the download completes you can use the Verify your download option to ensure the integrity of the file.

2. Create Windows 11 bootable USB using Rufus with ISO download
   To use Rufus to download the Windows 11 ISO file and create a bootable media, connect a USB flash drive with 8GB of space, and then use these steps:
   - Open Rufus website. https://rufus.ie/en/
   - Under the “Download” section, click the link to download the latest version.
   - Double-click the executable to launch the tool. You should see a window similar to the one shown below. Note the content might not be the same.



   - Under the “Device” section, use the drop-down menu and select the USB flash drive to create the installation media.
   - Under the “Boot selection” section, use the drop-down menu and select the “Disk or ISO image” option. Here you select the previously downloaded ISO file for windows 11 and click Open.

- Under the “Image option” setting, select the “Standard Windows 11 Installation” option.



- Under the “Partition scheme” section, select the GPT option.
- Under the “Target system” section, select the UEFI (non-CSM) option.
- Under the “Volume label” section, specify a descriptive name for the bootable USB drive. For example, Win11_Install_USB.
- Use the default settings for the File system and Cluster size options.
- Check the Quick format option.
- Check the “Create extended label and icon files” option.
- Click the Start button.
- Click the OK button to confirm the USB’s deletion and the bootable drive’s creation.

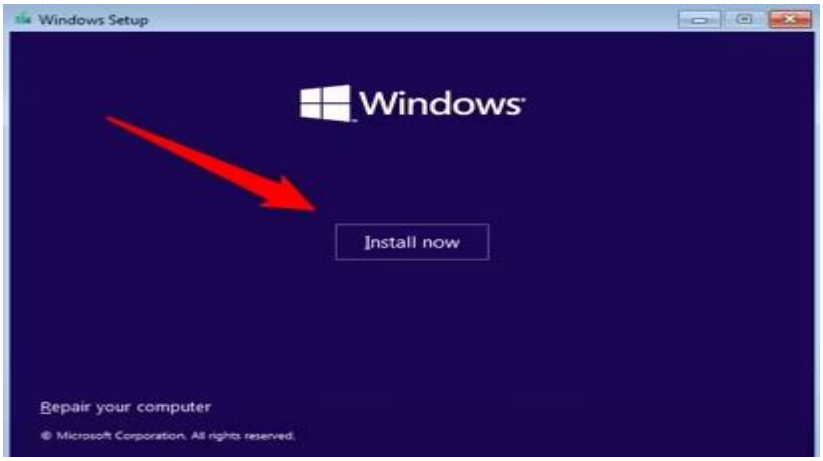
3. Install Windows 11 From the Bootable USB Drive
   Once the USB drive with the installation files is inserted into the destination PC, you'll need to set the boot order so that the computer loads the operating system from a location other than its hard drive. In this https://www.microsoft.com/software-download/windows11?c67ce50e-97a9-4855-bcd3-20c1aaefd752=Truecase, we want Windows to load the operating system from the USB drive.

   You'll need to access the boot menu on startup for this to work. When you're booting your computer, press the appropriate key to open the BIOS or UEFI controls. The key that you need to press differs between computers, but it's usually F11 or F12.

   After you select the USB drive from the boot menu, your PC will reboot from the USB drive (instead of the hard drive) and ask you to begin the setup of the installation media by pressing any key.

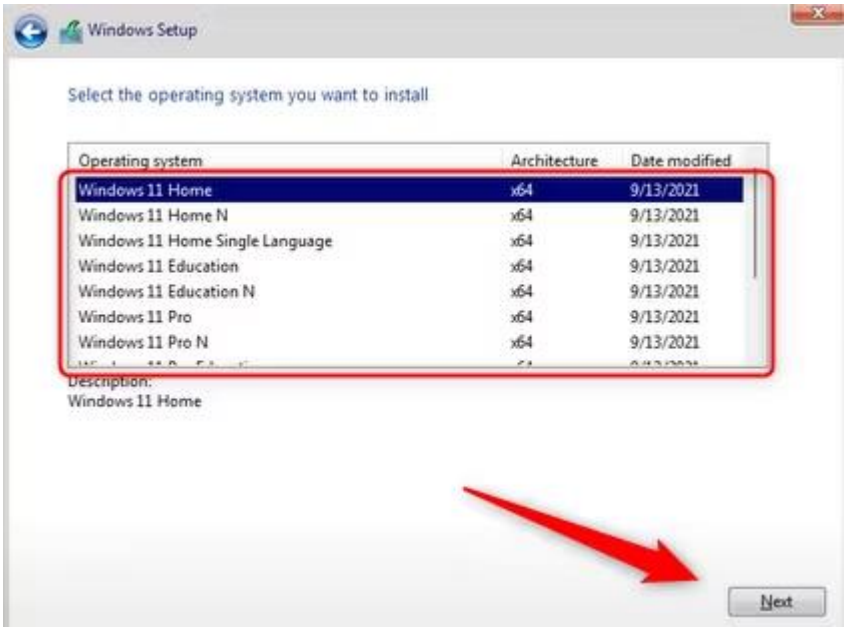
   - You're now ready to set up your computer with Windows 11. First, you'll need to choose the language to install, the time and currency format, and the keyboard or input method. To change one of the preset options, click the down arrow and select an option from the drop-down menu. However, you'll rarely need to change anything here. Click "Next" when you're ready to move forward.

   - Click "Install Now" on the next screen.



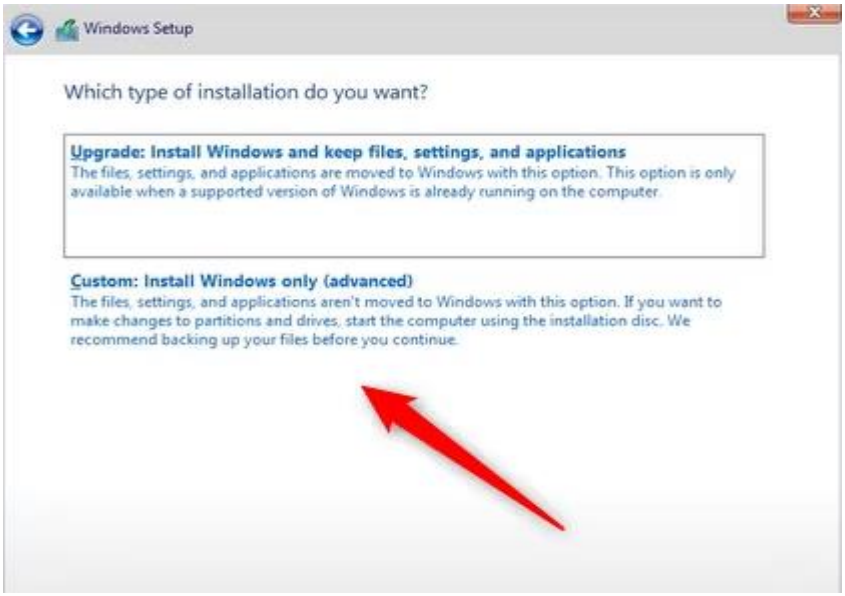
- Windows will tell you that setup is starting, and then you'll be on the Windows Setup screen. This is the screen where you will activate your version of Windows. If you have your product key, enter it in the text box. If you don't, you can run a limited version of Windows by choosing "I Don't Have a Product Key" at the bottom of the window. If you choose the latter option, you can enter the product key at a later point to unlock everything.
- If you entered your product key, click "Next" to continue. We'll select "I Don't Have a Product Key" in this example.

- On the next screen, select the version of Windows 11 that you want to install. If you already have a product key, be sure to select the correct version, as product keys only work with their respective version. Once you select your version, click "Next."



- Accept the license terms on the next screen by checking the box. Click "Next" to proceed.

- You can then select to upgrade, which installs the new version of Windows while keeping your files, apps, and settings. We'll select "Custom: Install Windows Only (Advanced)" since we're doing a fresh install.



- Finally, select where you want to install Windows. If your hard drive is new, it may say something like "Drive 0 Unallocated Space." If you've partitioned your drive, its name will reflect that. Select the drive and then click "Next."
- The Wizard will now begin installing the Windows files. The length of this process varies from computer to computer and could take a bit of time.
- Once finished, your computer will reboot. In some cases, you'll get stuck in a boot loop where the system tries to bring you back to the installation process. This happens because the system might be trying to read from the USB drive instead of from the hard drive that you installed the OS on. If this happens, remove the USB drive and restart the computer.
- You've now successfully installed Windows 11 on your PC! Windows 11 may feel a bit jarring at first after using Windows 10 for a long time, most notably the Start menu. Take time to explore Windows 11---after a bit of time, you'll learn to love it!

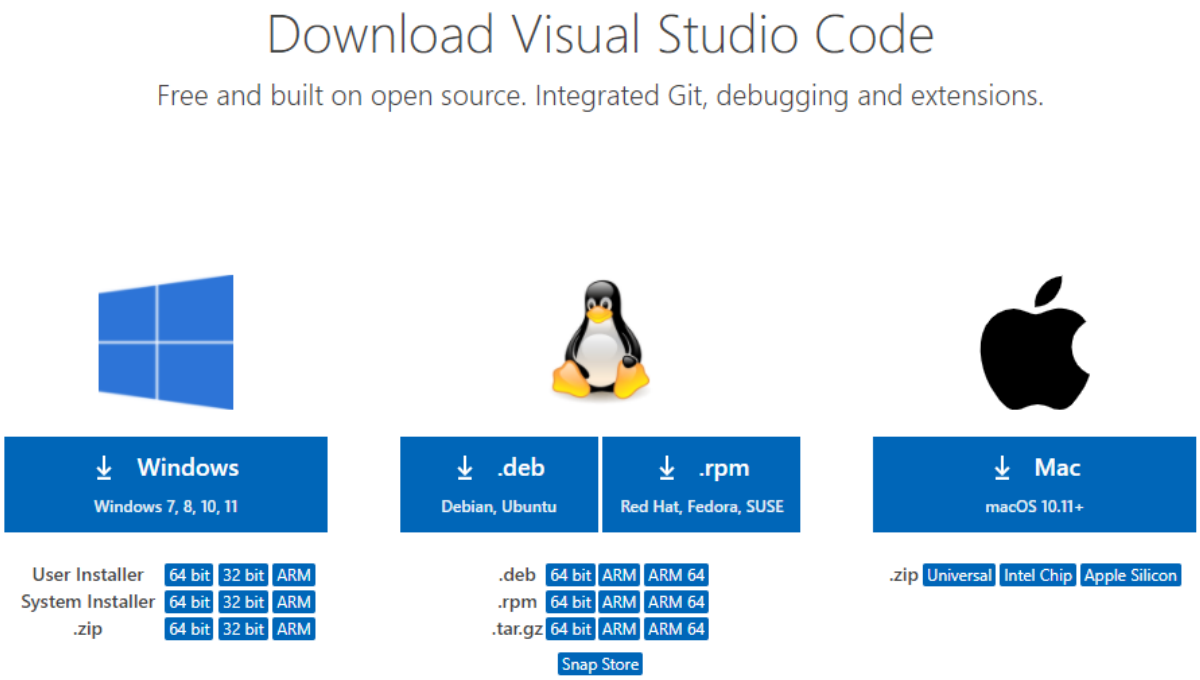
TEXT EDITOR / IDE INSTALLATION

Visual Studio Code is the most popular code editor and the IDEs provided by Microsoft for writing different programs and languages. It allows the users to develop new code bases for their applications and allow them to successfully optimize them.

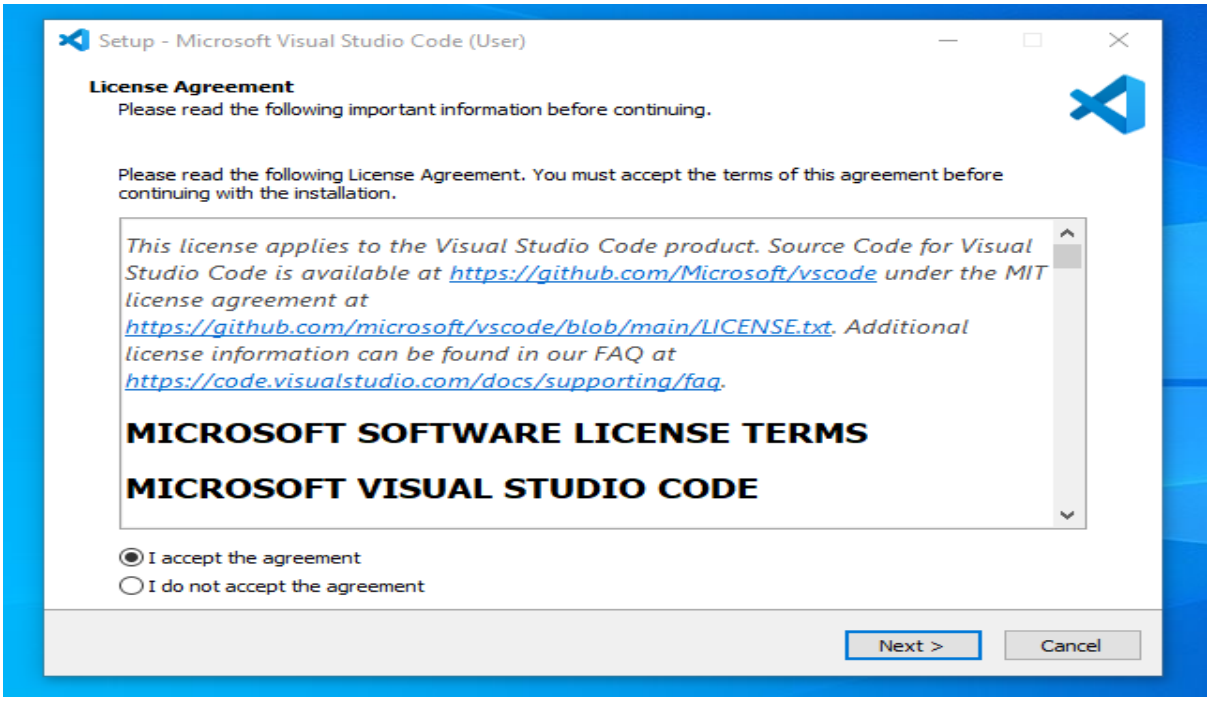
In this chapter, we are going to list all the steps required to Install VS Code on Windows in a detailed format.

1. Visit the Official Website of the Visual Studio Code using any web browser like Google Chrome, Microsoft Edge, etc.

2. Press the “Download for Windows” button on the website to start the download of the Visual Studio Code Application.

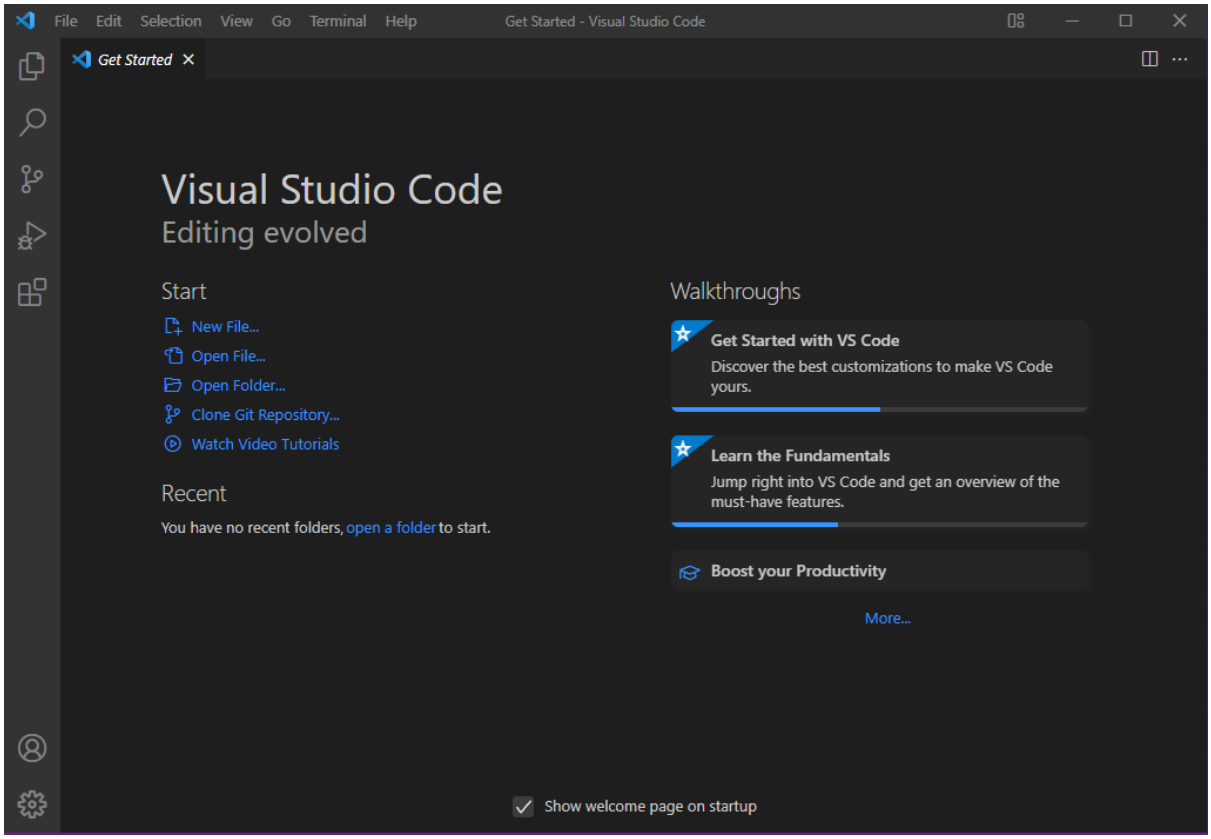


3. When the download finishes, then the Visual Studio Code Icon appears in the downloads folder.
4. Click on the Installer icon to start the installation process of the Visual Studio Code.
5. After the Installer opens, it will ask you to accept the terms and conditions of the Visual Studio Code. Click on I accept the agreement and then click the Next button.



6. Choose the location data for running the Visual Studio Code. It will then ask you to browse the location. Then click on the Next button.
7. Then it will ask to begin the installation setup. Click on the Install button.
8. After clicking on Install, it will take about 1 minute to install the Visual Studio Code on your device.

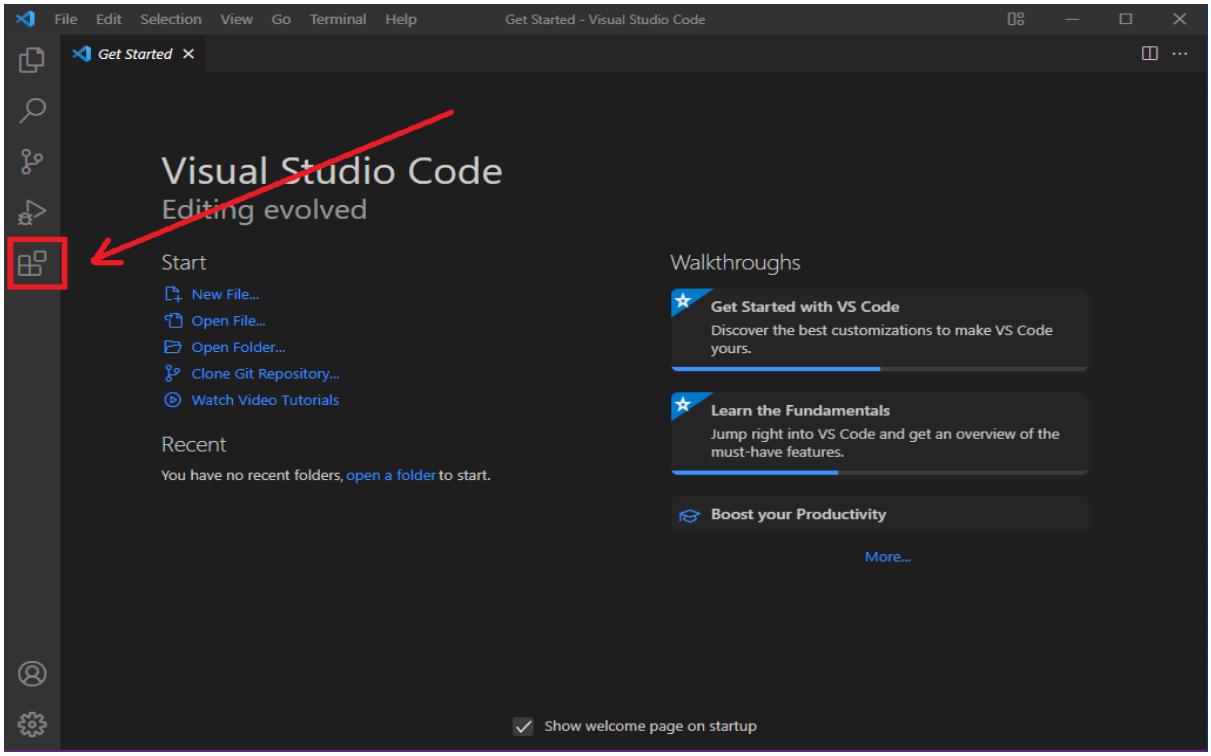
9. After the Installation setup for Visual Studio Code is finished, it will show a window like this below. Tick the “Launch Visual Studio Code” checkbox and then click Next.
10. After the previous step, the Visual Studio Code window opens successfully. Now you can create a new file in the Visual Studio Code window and choose a language of yours to begin your programming journey!



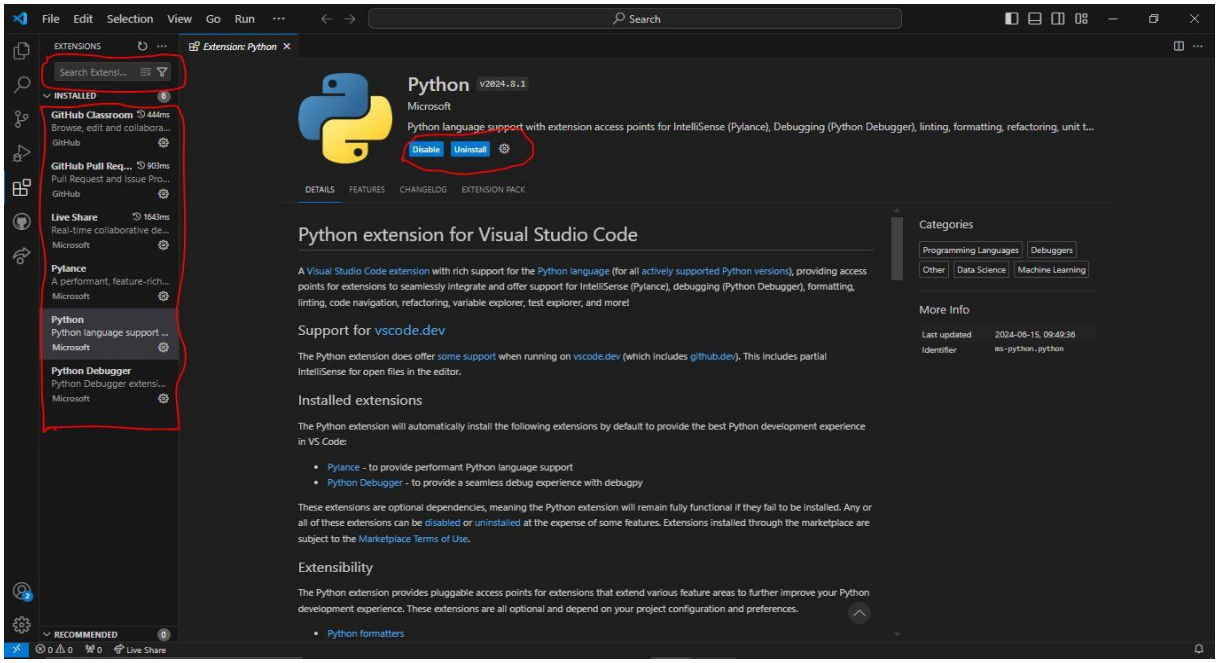
INSTALLING NECESSARY EXTENSIONS AND PLUGINS

1. **Python Extension**

To install extensions in Visual Studio Code, on the visual studio code window select the extension tab as shown below



Then from there you can search any of the vs code extensions and various plugins in accordance to your preference and install it. Installed extensions and plugins can also be enable, disable and uninstalled in an instance you are using VS Code. Basically in the extensions tab of VS Code you can manage extensions and plugins in accordance to your preference.

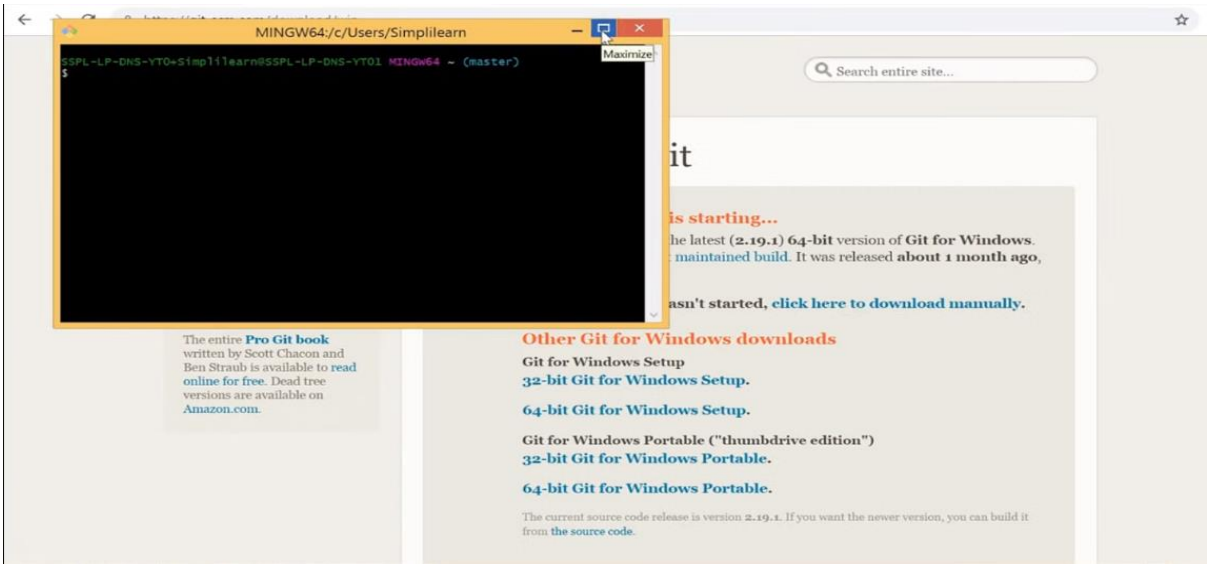


VERSION CONTROL SYSTEM (GIT) SETUP

Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later.

In this chapter, we are going to list all the steps required to Install, Configure and Initialize Git on Windows in a detailed format.

- Download the latest version of Git from the official site https://www.git-scm.com/downloads and choose the 64/32 bit version. After the file is downloaded, install it in the system. Once installed, select Launch the Git Bash, then click on finish. The Git Bash is now launched.



- Check the git version by running the following command

```
$ git --version
```

- For any help, use the following command:

```
$ git help config
```

This command will lead you to a browser of config commands. Basically, the help the command provides a manual from the help page for the command just following it (here, it's config).

Another way to use the same command is as follows:

```
$ git config --help
```

- Create a local directory using the following command:

```
$ mkdir test

$ cd test
```

- The next step is to initialize the directory:

```
$ git init
```

- Go to the folder where "test" is created and create a text document named "demo." Open "demo" and put any content, like "Hello PLP." Save and close the file.
- Enter the Git bash interface and type in the following command to check the status:

```
$ git status
```

- Add the "demo" to the current directory using the following command:

```
$ git add demo.txt
```

- Next, make a commit using the following command:

```
$ git commit -m "committing a text file"
```

- Link the Git to a Github Account:

```
$ git config --global user.username
```

- Open your Github account and create a new repository with the name "test_demo" and click on "Create repository." This is the remote repository. Next, copy the link of "test_demo."
- Go back to Git bash and link the remote and local repository using the following command:

```
$ git remote add origin <link>
```

Here, <link> is the link copied in the previous step.

PROGRAMMING LANGUAGES AND RUNTIMES INSTALLATION

Download and installation of Python

Python is a widely used general-purpose, high-level programming language. Every Release of Python is open-source. Python releases have also been General Public License (GPL) -compatible.

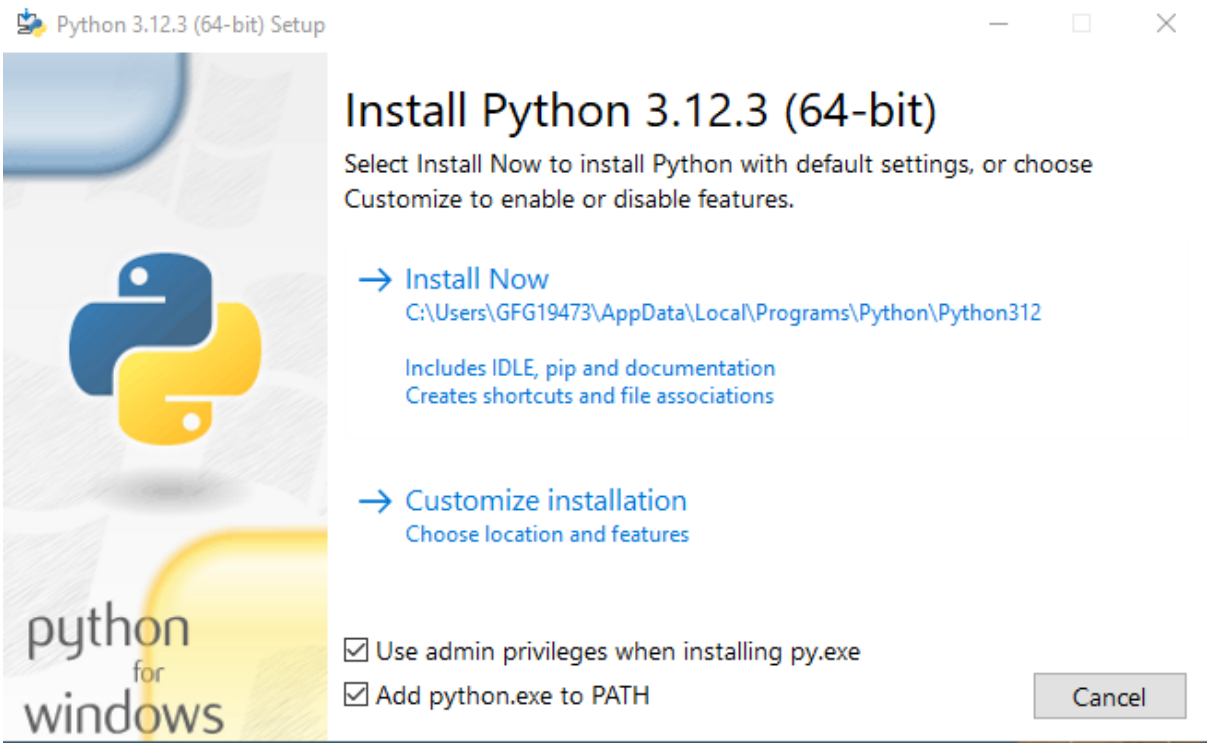
Since Windows doesn't come with Python preinstalled, it needs to be installed explicitly. Here we will define step by step tutorial on How to install Python on Windows. Follow the steps below :

- Visit the Python Website and Navigate to the Downloads Section
  First and foremost step is to open a browser and type Python Download or paste link (https://www.python.org/downloads/)
- Choose the Python Version
  Click on the version you want to download. – Python 3.12.3 (the latest stable release as of now is Python 3.12.3).

- Download the Python Installer
  Once the download is complete, run the installer program. On Windows, it will typically be a .exe file.

Here we are providing the installation process of Python 3.11.2 on Windows

- Run the Python Installer for how to install Python on the Windows downloads folder
- Make sure to mark Add Python to PATH otherwise you will have to do it explicitly. It will start installing Python on Windows.



- After installation is complete click on Close. Bingo..!! Python is installed. Now go to Windows and type IDLE.

Installation of Python Package Manager(pip)

It's a good idea to check whether 'pip,' the Python package manager, is already installed on your system.

- **Open Your Command Line or Terminal**: To begin, you'll need to access your command line or terminal. On Windows, you can use Command Prompt or PowerShell, while macOS and Linux users can utilize Terminal.
- **Type the Command**: In your command line or terminal, type the following command and press Enter:

---

pip --version

This command will display the version of 'pip' if it's installed. If you see a version number, you're all set. You can skip the 'pip' installation step and proceed directly to installing Python.
No 'pip' Installed?: If you receive an error message or no version information, it means 'pip' is not present on your system. I'll guide you through installing it.

- **Check Python Installation**: Before proceeding, make sure you have Python installed on your system. To do this, open Command Prompt or PowerShell and type:

---

python --version

You should see the Python version displayed. If Python is not installed, you'll need to download and install it. You can find the Python installer on the official Python website (python.org).

- **Download PIP get-pip.py**
  Before installing PIP, download the get-pip.py file. Run the following cURL command in the command prompt:

---

curl https://bootstrap.pypa.io/get-pip.py -o get-pip.py

- **Installing PIP on Windows**

  To install PIP, run the following Python command:

---

python get-pip.py

- **Verify Installation**

  To test whether the installation was successful, type the following command:

---

python -m pip help

- **Add Pip to Path**
  To run PIP from any location and as a standalone command, add it to Windows environment variables. Doing so resolves the "not on Path" error.
  To add PIP to Path, follow these steps:
  - Open the Start menu, search for **Environment Variables**, and press Enter.
  - Click the **Environment Variables** button.
  - Double-click the **Path** variable to edit it.
  - Select **New** and add the directory where PIP is installed.
  - Click OK to save the changes.

Download, Installation and Configuration of MySQL

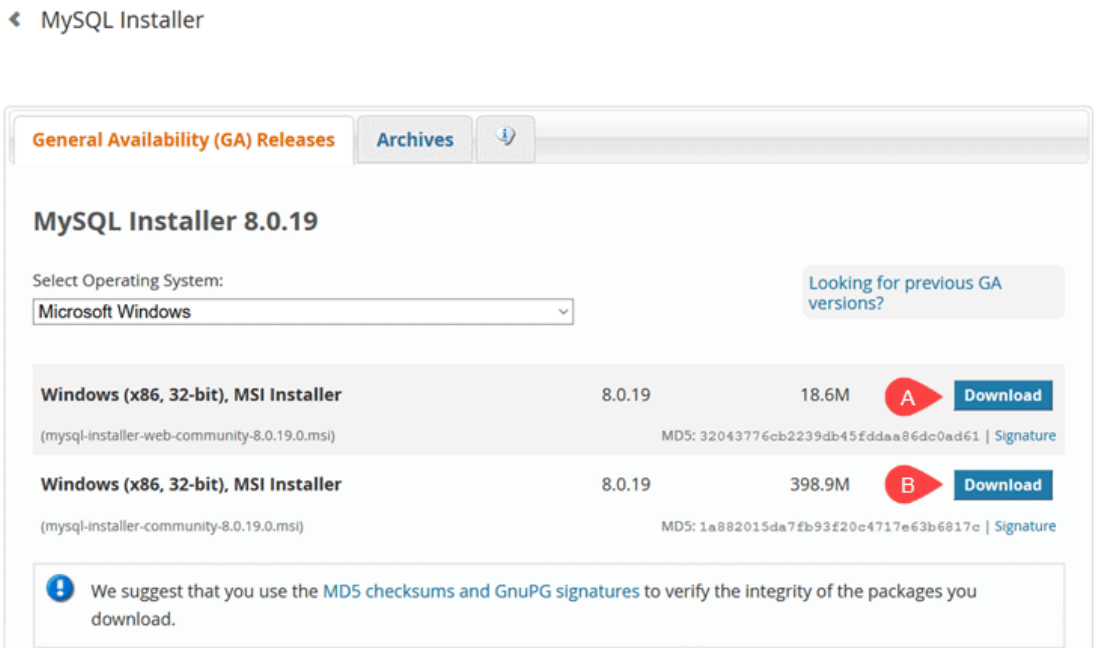
The MySQL Installer for Windows helps you control the installation process by providing a user-friendly interface. It also guides you through the steps needed to configure MySQL.

Access your Windows server and download the MySQL Installer. A free Community edition MySQL Installer is available from the official page: https://dev.mysql.com/downloads/installer/

You are given the option to download either the Web Community version or the Full MySQL package.

- The Web version (A) contains only the MySQL Installer and configuration files. You can customize and add additional MySQL products at a later point.
- The Full version (B) contains all MySQL Windows products, including the MySQL Server.

Select and download your preferred version. In this example, we selected the Full MySQL Package (B).



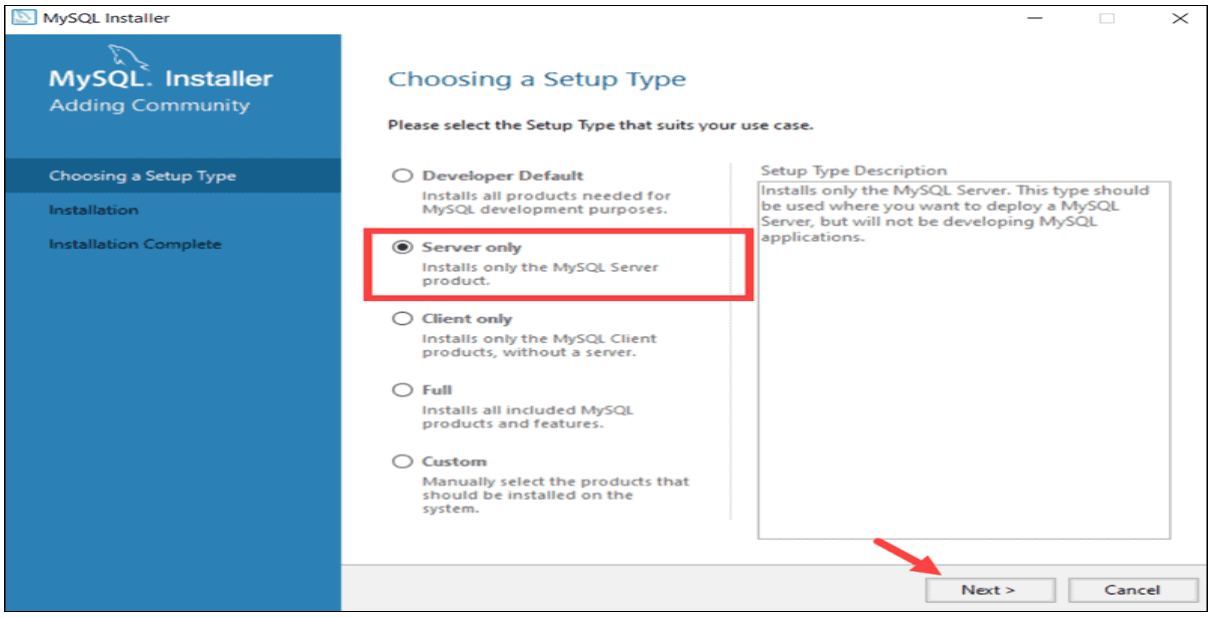
After selecting a version, you are provided with the option of signing up for a MySQL Community account. If you are not interested, select the No thanks, just start my download option at the bottom of the page.

By selecting this option, the download process starts immediately. Once the download is complete, you can execute the MySQL Installer file from the download folder. It can take a few moments while Windows configures the MySQL Installer and prepares the installation and configuration process.

After accepting the Oracle license agreement terms, the first screen you encounter allows you to define which MySQL products are going to be installed. You can choose between several predefined options or create your custom setup type.

- Developer Default installs all the tools you need to develop and micromanage your MySQL databases effectively.
- Server Only is used to install an instance of the MySQL Server and forgo other MySQL products.
- Client Only installs all products except the MySQL Server and associated tools.
- The Full configuration installs all available MySQL products.

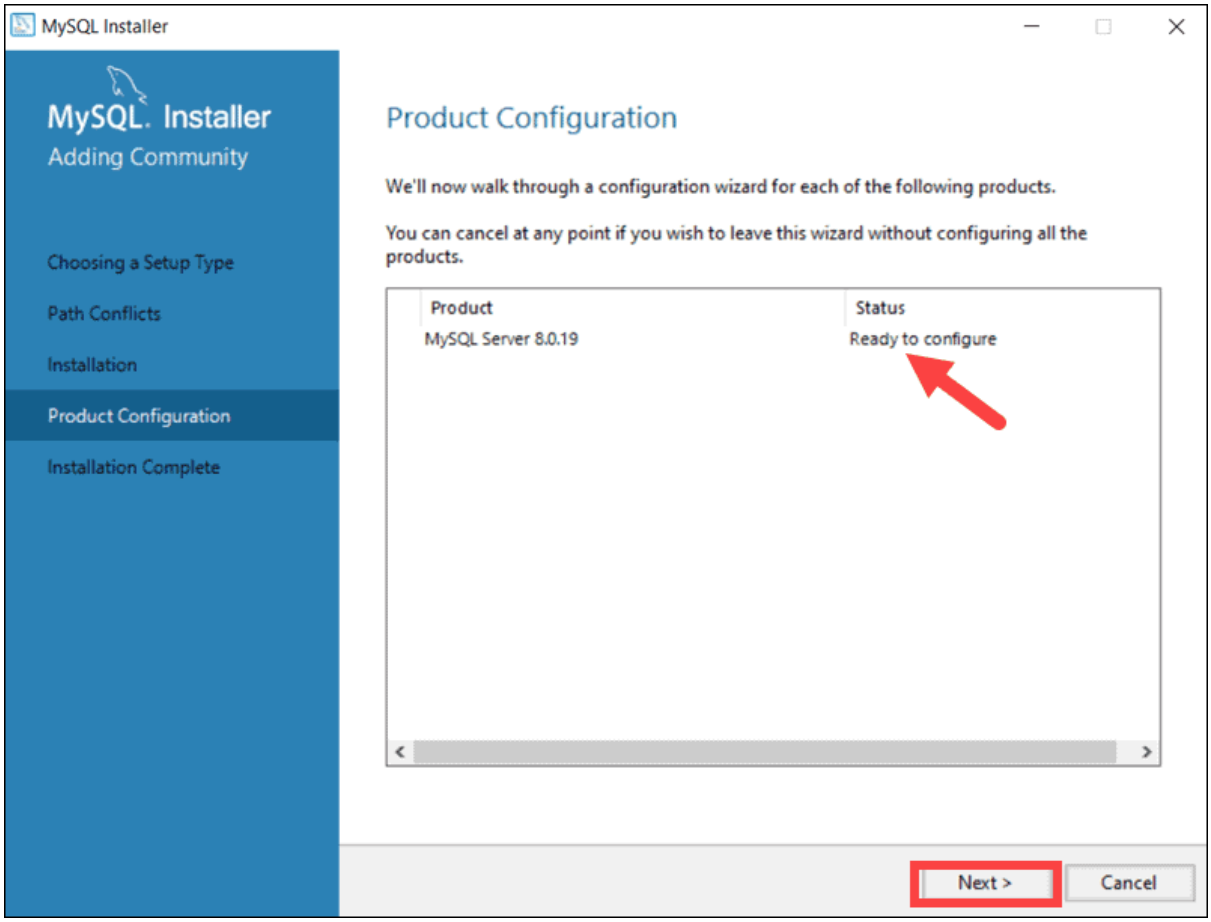
A Custom setup allows you to select the individual elements that are to be installed and alter predefined default settings.



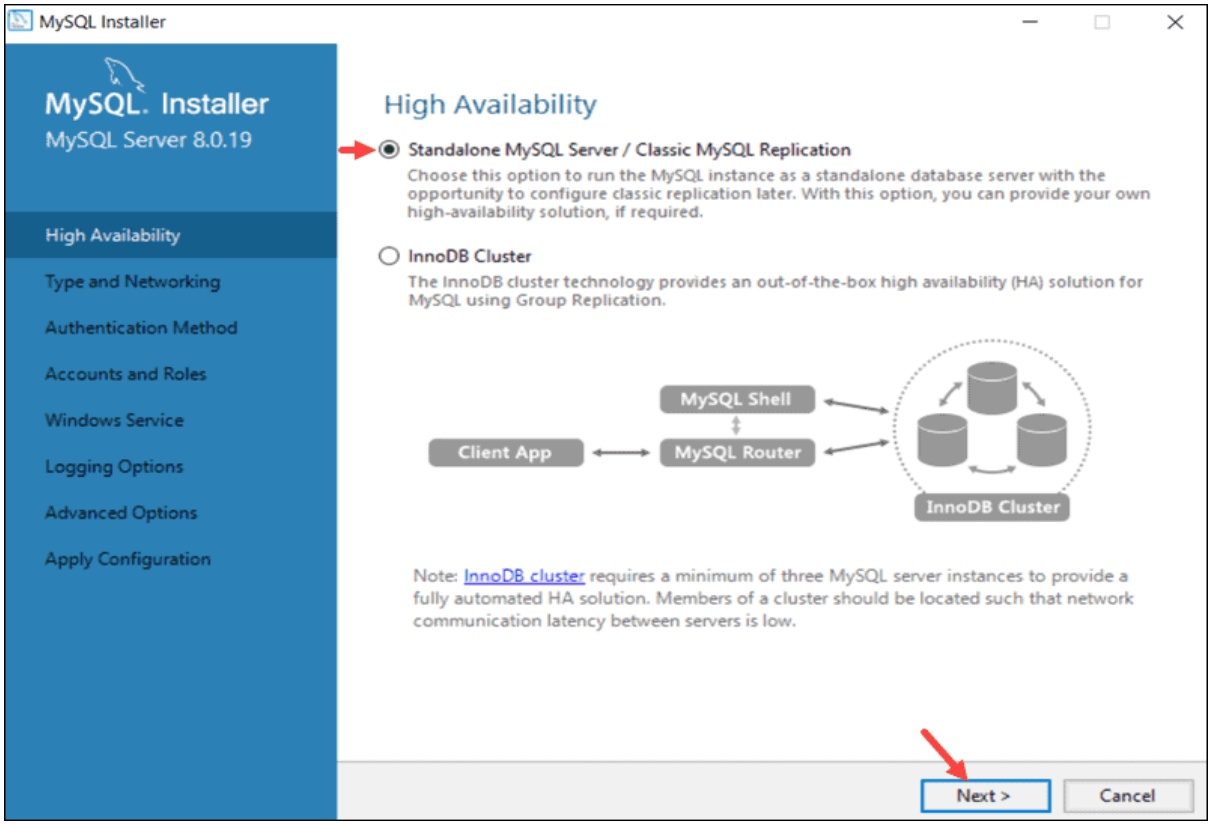
At this point, the system tries to resolve possible inconsistencies. It might inform you that additional packages need to be installed for the process to continue (e.g., Microsoft Visual C++ 2019 Redistributable Package). You can also run into Path installation inconsistencies if you have previous MySQL installations on your Windows Server.

Luckily the MySQL Installer auto-resolves issues and installs the latest binary compatible version of missing software. You are now ready to start the installation process in earnest. Click Execute to begin the installation process.

Once the status of the installation status is labeled as Complete, you are ready to configure the MySQL database.



Configure Mysql Server 0n Windows



- High Availability
  The first configuration option affects database availability. It allows you to decide if you want to set up a Standalone MySQL Server or an InnoDB server cluster to improve availability. In this instance, we selected the classic, single server option.
- Type and Networking
  The Type and Networking section is used to define several essential features.
  The Config Type option lets you choose between three server configuration types.
    - Development Computer, Server Computer, and Dedicated Computer define whether the server is dedicated solely to running your MySQL database or is going to share the underlying system with other applications.

  The Type and Networking tab can also define the port the MySQL server is listening on. The default setting is port number 3306 and can be changed to suit your needs.

  By checking the Show Advanced and Logging Option box, you can set additional logging options at a later stage.

- Authentication Method
  It is possible to choose between two authentication methods, the recommended Strong Password Encryption, and the Legacy Authentication Method. Select the recommended Use Strong Password Authentication option.
- Accounts and Roles
  You are now prompted to enter a password for your MySQL root user. You can also create additional roles for various users and purposes.
  This is only an initial setup, and credentials can be edited once the installation is complete.
- Windows Service
  By defining MySQL as a Windows Service, it can now start automatically whenever the Windows system boots.
  If you decide to start MySQL as an executable application, you would need to configure it manually.
- Apply Configuration
  You have successfully configured the MySQL server and need to confirm for the MySQL Installer to apply the configuration.
  An overview of the configurations steps appears on the screen. Click Execute to apply the configuration.

Click Finish to complete the MySQL server installation on Windows.

Start MySQL Server on Windows
If you need to start the MySQL Server on Windows for the first time enter the following command in the Windows Command Prompt:

```
"C:\Program Files\MySQL\MySQL Server 8.0\bin\mysqld" --console
```

The path in this command is the default installation folder. In case you have installed MySQL in a different folder, the command needs to reflect that to launch the mysqld executable file successfully.

The --console option displays output directly on your console. Omitting this option sends the output directly to the MySQL logs.

Stop MySQL Server on Windows
To shut down MySQL Server in Windows, type the following command in the Windows Command Prompt:

```
"C:\Program Files\MySQL\MySQL Server 8.0\bin\mysqladmin" -u root shutdown
```

The mysqladmin tool performs the shutdown command and fully stops the MySQL server. The system does not provide output as confirmation.

REFERENCES

G, J. (2023, December 29). *How to install PIP on Windows | phoenixNAP KB*. From Knowledge Base by phoenixNAP: https://phoenixnap.com/kb/install-pip-windows

V, K. (2021, July 1). *How to install and configure MySQL on Windows*. From Knowledge Base by phoenixNAP: https://phoenixnap.com/kb/install-mysql-on-windows