

PLP SOFTWARE ENGINEERING

Setting Up Developer Environment

1. Select Your Operating System (OS): Choose an operating system that best suits your preferences and project requirements.

Steps for downloading and Installing Ubuntu

a. Check your System Requirements

Ensure your computer meets the system requirements for Ubuntu:

2 GHz dual-core processor

4 GB RAM

25 GB of free hard drive space

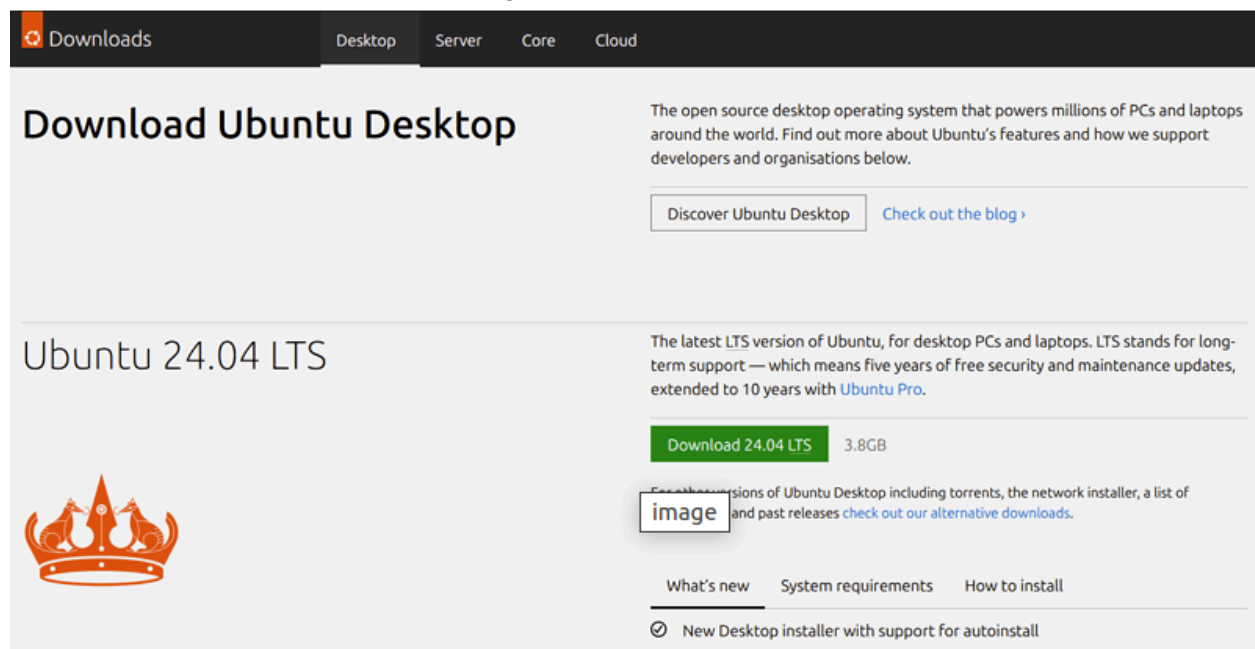
b. Backup your Data

Backup all important data from your computer to avoid any loss during the installation process.

c. Download Ubuntu

Go to the Ubuntu Download Page.

Click on "Download" to get the latest version of Ubuntu.



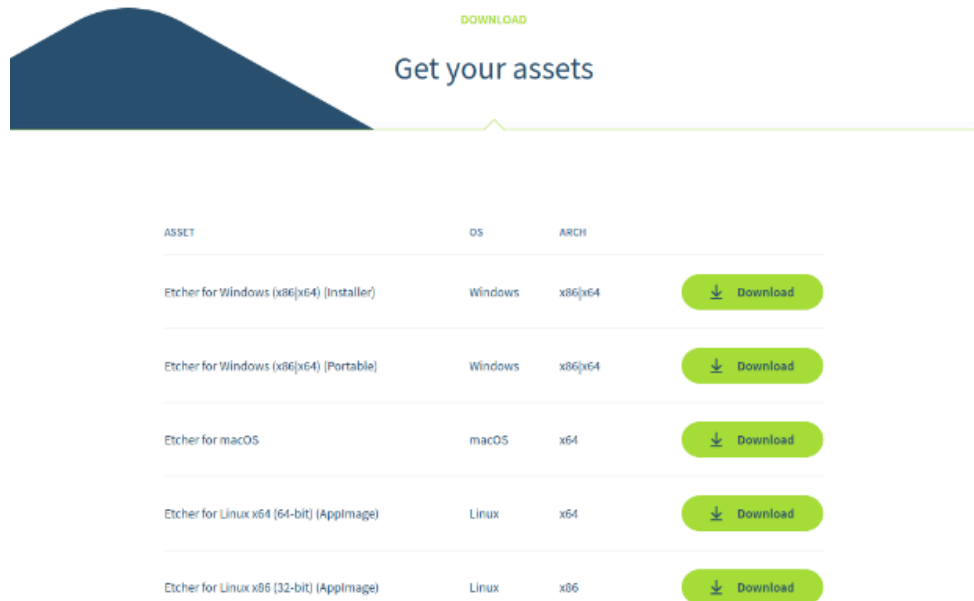
d. Create installation Media

Using Rufus (for Windows users):

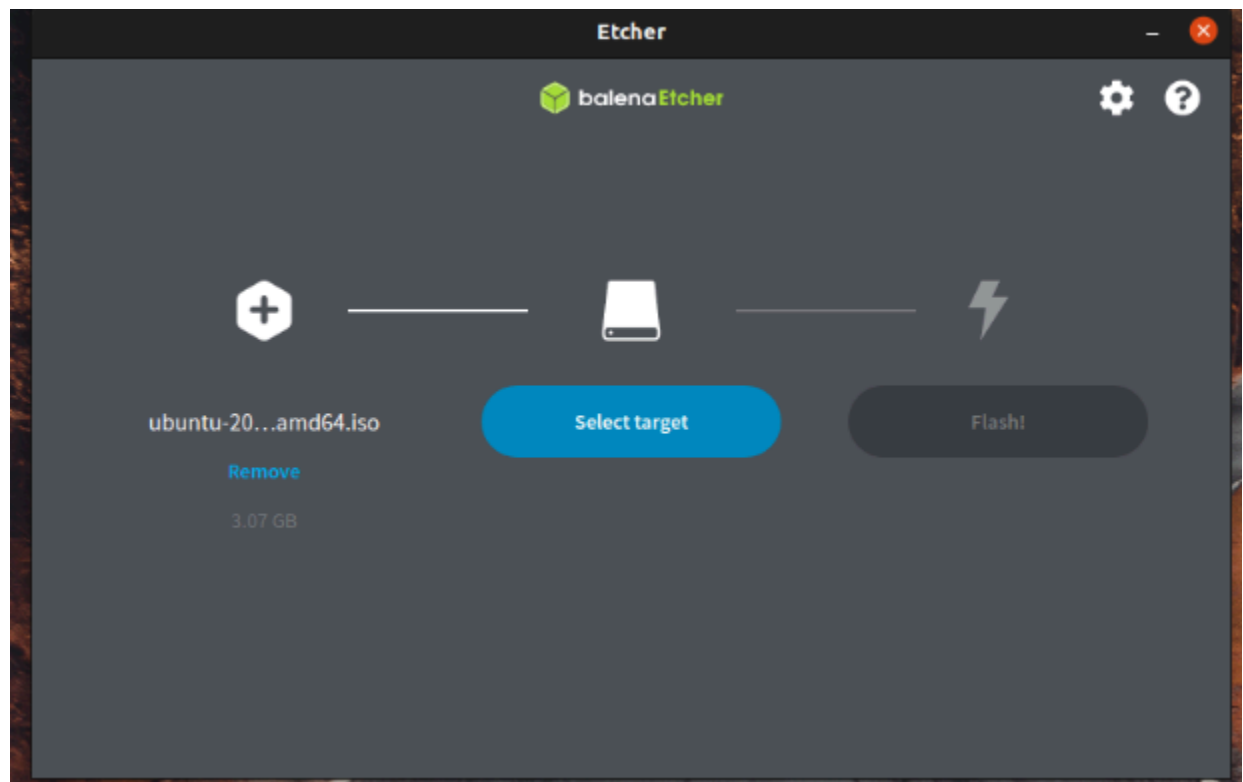
- Download and install Rufus.
- Insert a USB flash drive (minimum 4 GB).
- Open Rufus and select the downloaded Ubuntu ISO file.
- Choose the USB flash drive as the destination and click "Start" to create the bootable USB drive.

Using Balena Etcher (for macOS and Linux users):

- Download and install Balena Etcher.
- Insert a USB flash drive (minimum 4 GB).
- Open Etcher, select the downloaded Ubuntu ISO file, choose the USB flash drive as the destination, and click "Flash!" to create the bootable USB drive.



In the above, select the Etcher for linux

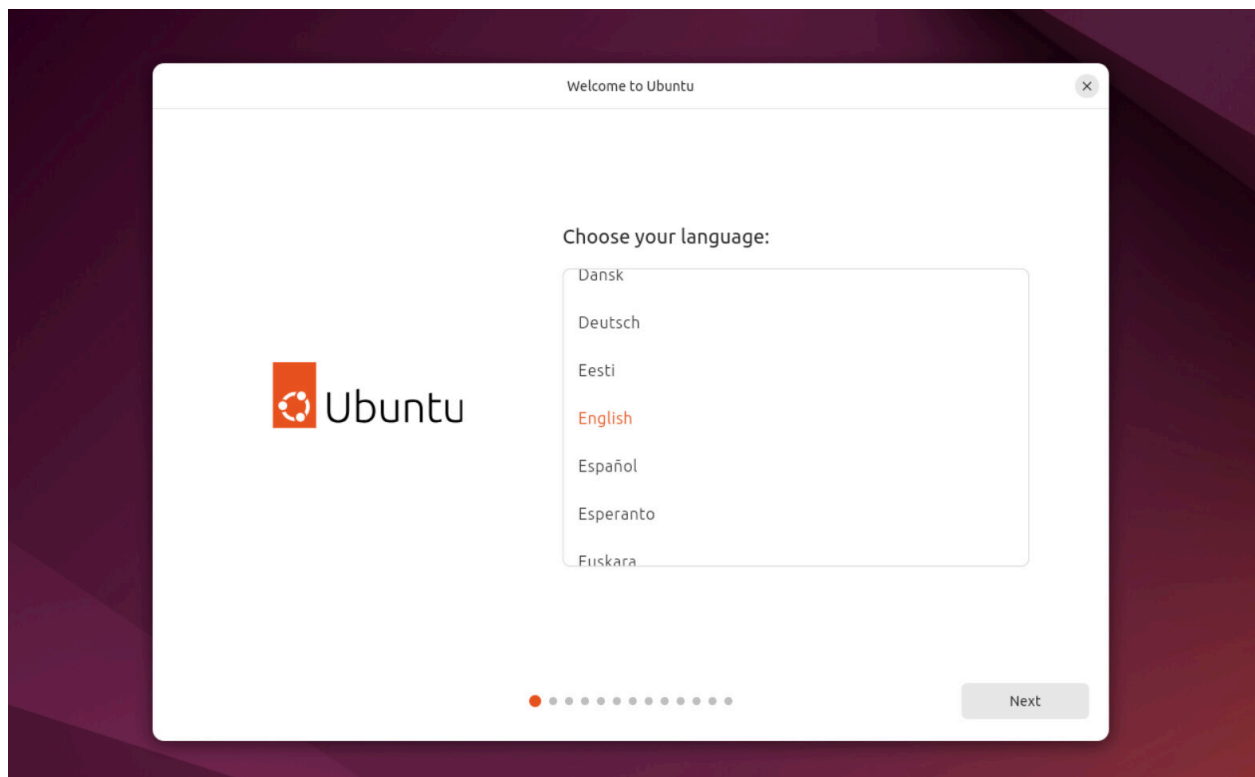


e. Prepare your Personal Computer for Installation

- Insert the USB flash drive containing the Ubuntu installation media into your PC.
- Restart your computer.
- Enter the BIOS/UEFI settings (commonly accessed by pressing keys like F2, F12, Delete, or Esc during startup).
- Change the boot order to boot from the USB drive first.

f. Install Ubuntu

Boot from the USB drive and follow the installation instructions as shown in the screenshots below.



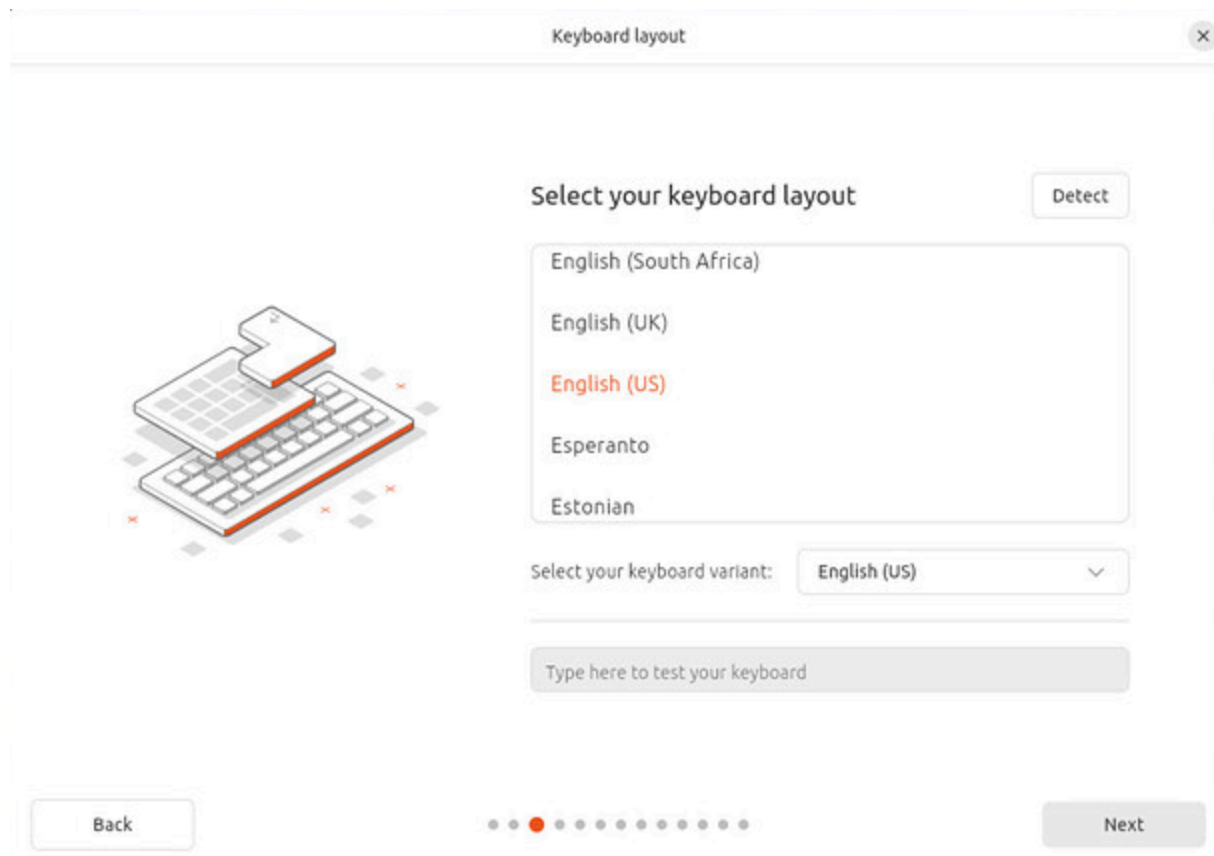
Accessibility in Ubuntu

Customise Ubuntu to your needs before you set up. You can change them later in System Settings.



- 👁 Seeing >
- 👂 Hearing >
- 🖱 Typing >
- 🖱 Pointing and clicking >
- 🔍 Zoom >

[Back](#)[Next](#)



Use wired connection in the case where you have an ethernet cable with internet connected to your pc



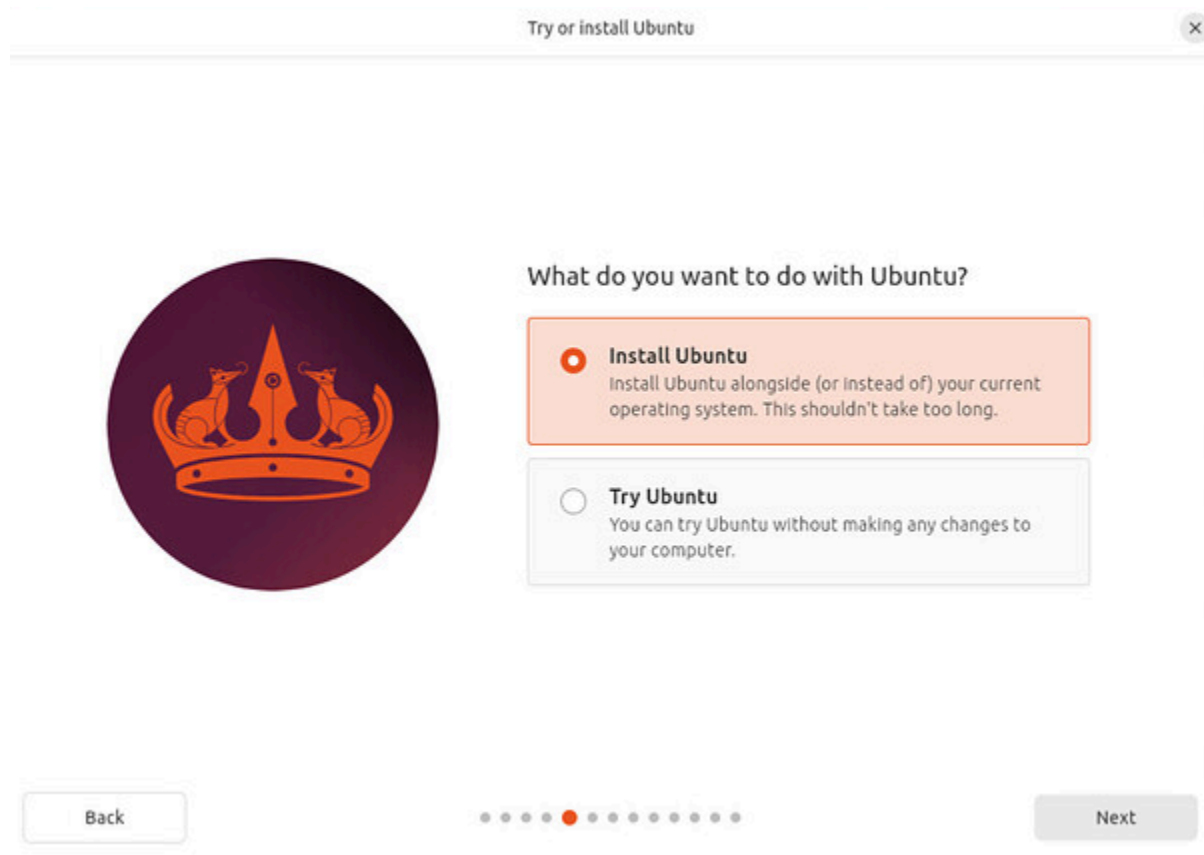
Connect to the internet

An internet connection will improve your installation with compatibility check and extra software packages.

- ☒ Use wired connection
- ☐ No Wi-Fi devices detected
- ☐ Do not connect to the internet

[Back](#)[Next](#)

Click Next to install Ubuntu into your pc





How do you want to install Ubuntu?



Erase disk and install Ubuntu

Start from scratch on your selected disk.

Advanced features...

None selected



Manual installation

For advanced users seeking customized disk setups.

Back



Next



Create your account

Your name
Local Optimum ✓

Your computer's name
NobleNumbat ✓

Your username
local-optimum ✓

Password
***** Show Fair password

Confirm password
***** ✓

☒ Require my password to log in

☐ Use Active Directory

Back



Next

Select your timezone

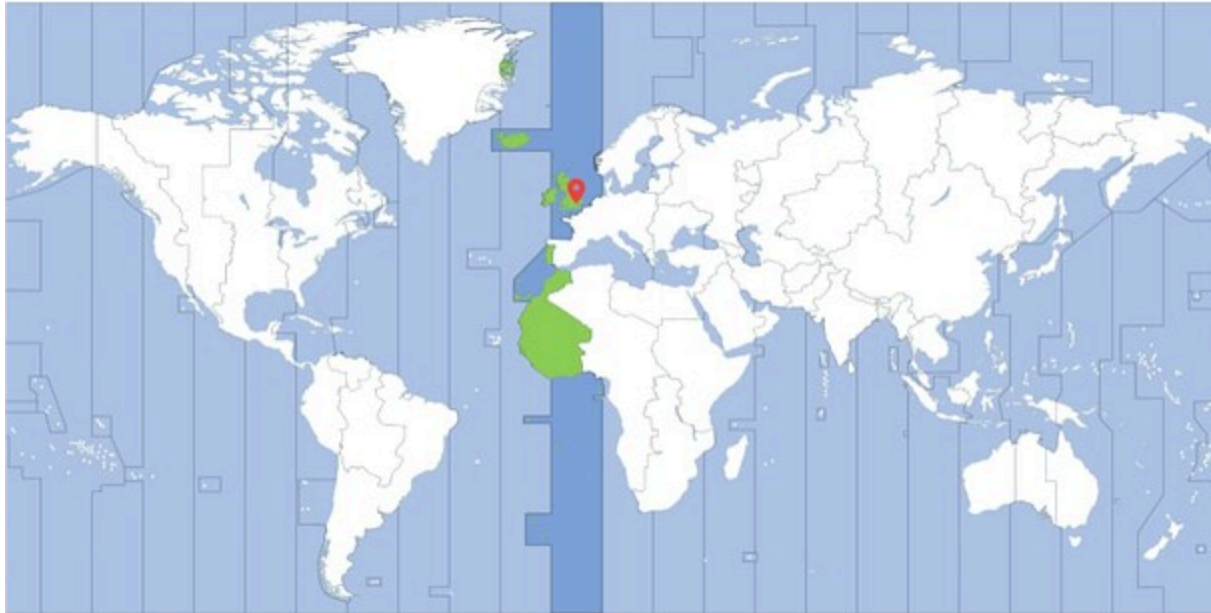


Location

London (England, United Kingdom)

Timezone

Europe/London



Back



Next

Review your choices



General

Disk setup
Installation disk
Applications

Erase disk and install Ubuntu
vda
Default selection

Security & more

Disk encryption
Proprietary software

LUKS (LVM)
Codecs & drivers

Partitions

partition **vda1** formatted as **fat32** used for **/boot/efi**
partition **vda2** formatted as **ext4** used for **/boot**
partition **vda3** created

Back



Install

Ubuntu 24.04 LTS

Fast, free and full of new features

The latest version makes computing easier than ever.

Whether you're a developer, creator, gamer or administrator you'll find new tools to improve your productivity and enhance your experience in this release.



Installation complete



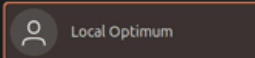
Ubuntu 24.04 LTS is installed and ready to use

Restart to complete the installation or continue testing.
Any changes you make not be saved.

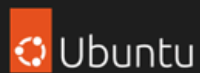
Continue testing

Restart now

Apr 12, 15:01



Not listed?

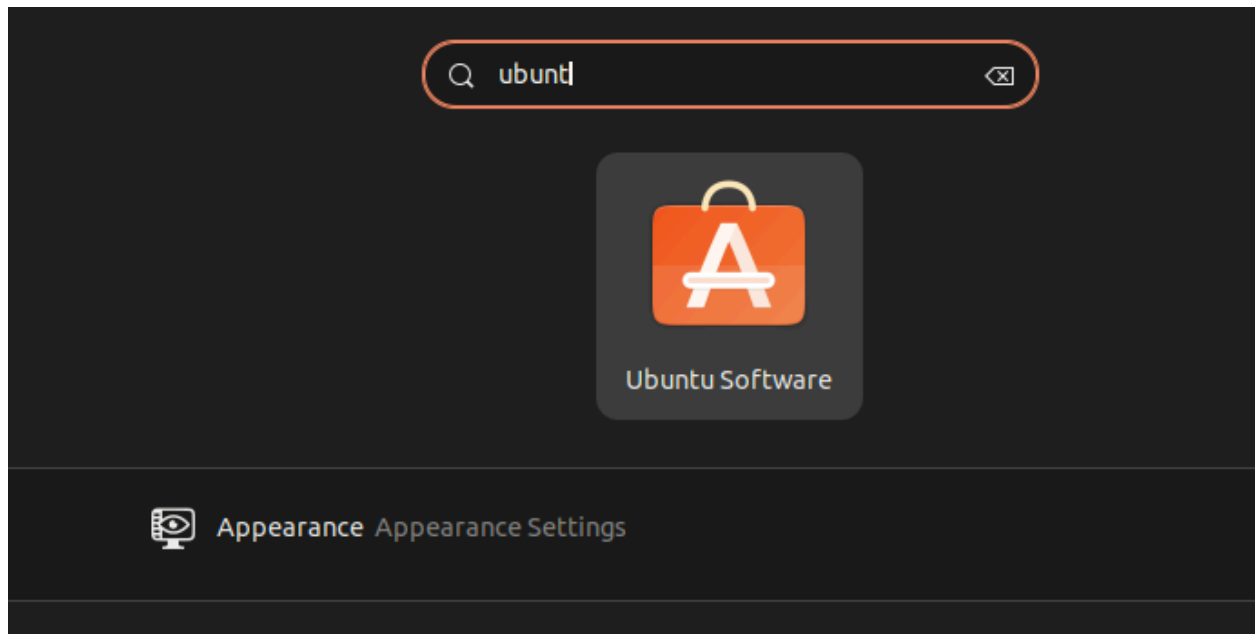


2. Install a Text Editor or Integrated Development Environment (IDE):

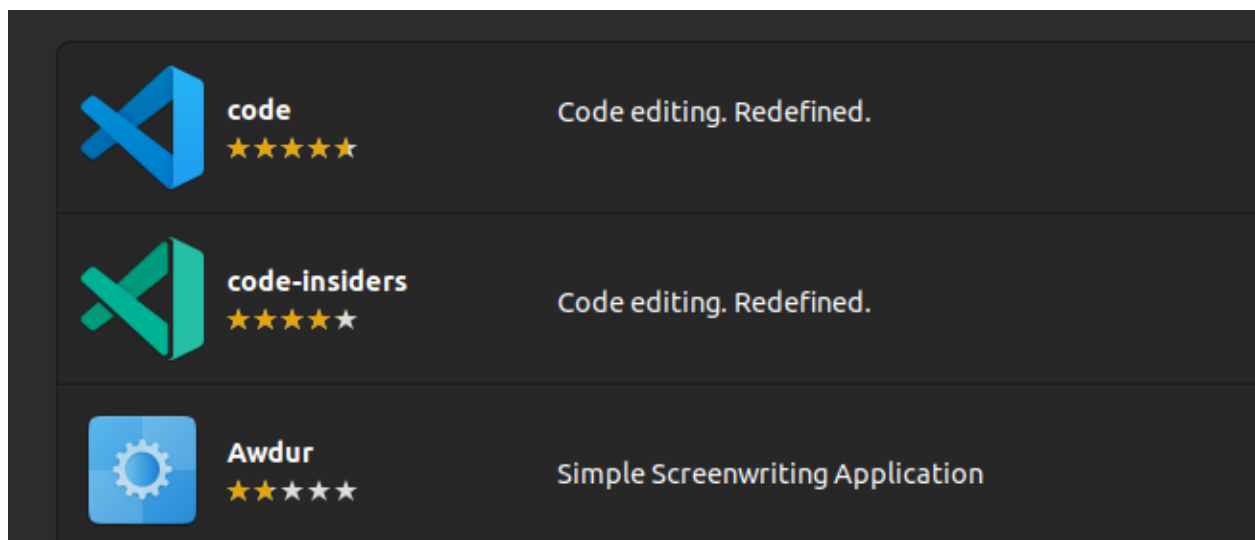
Select and install a text editor or IDE suitable for your programming languages and workflow. Download and Install Visual Studio Code.

In linux , you can download the vscode from the ubuntu software or you can also use commands in the terminal

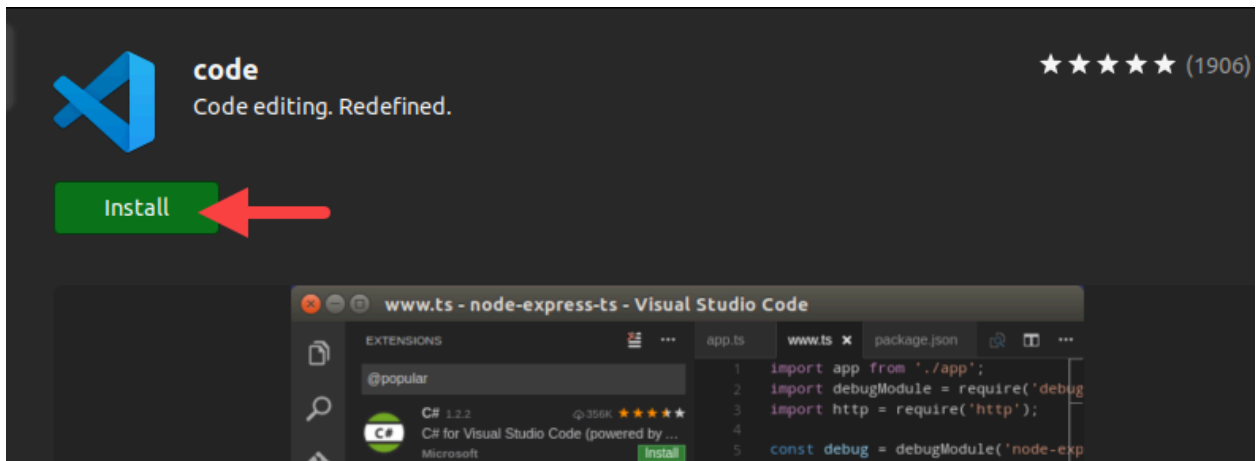
a. Open the ubuntu software



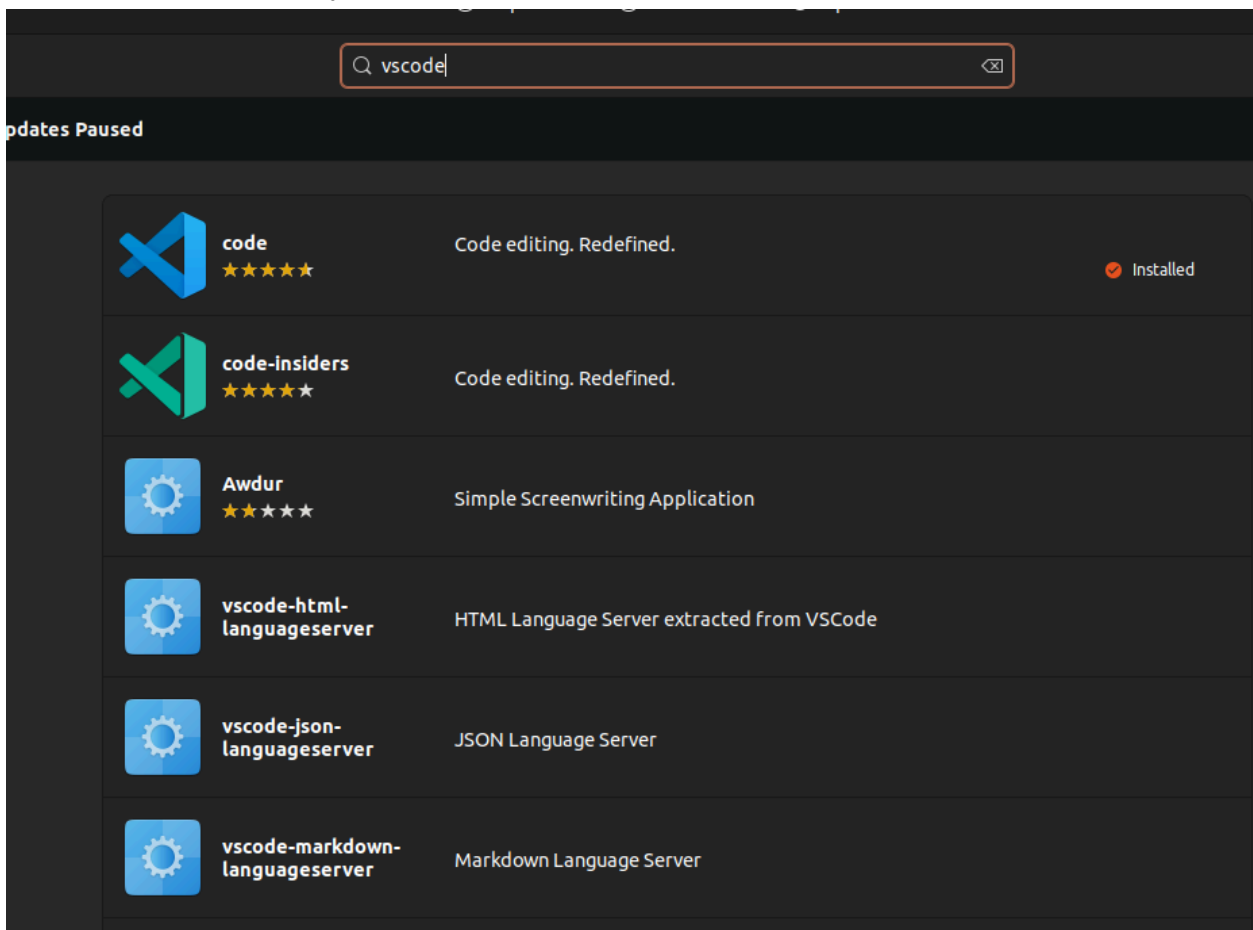
b. Search for vscode in the ubuntu software



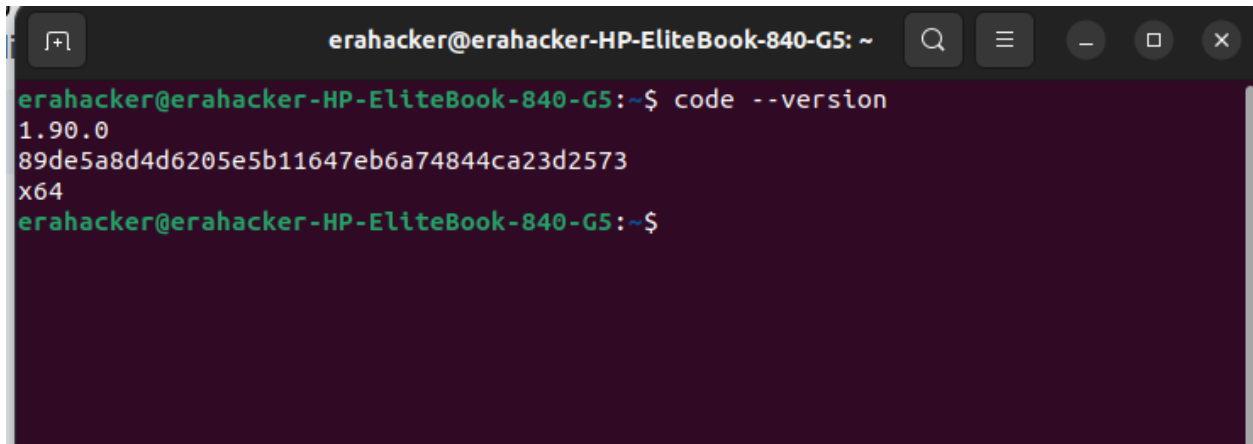
c. Click code then click install



d. It has successfully installed

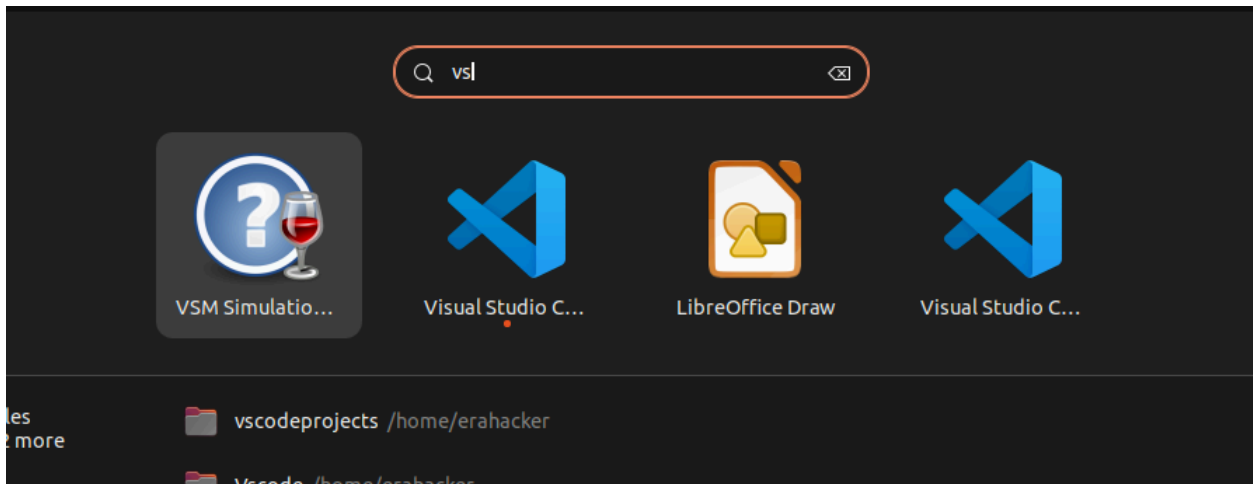


From the terminal it also shows that it is installed

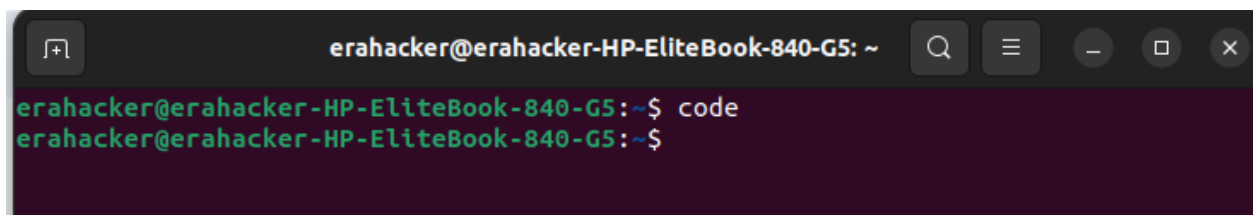


```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ code --version  
1.90.0  
89de5a8d4d6205e5b11647eb6a74844ca23d2573  
x64  
erahacker@erahacker-HP-EliteBook-840-G5:~$
```

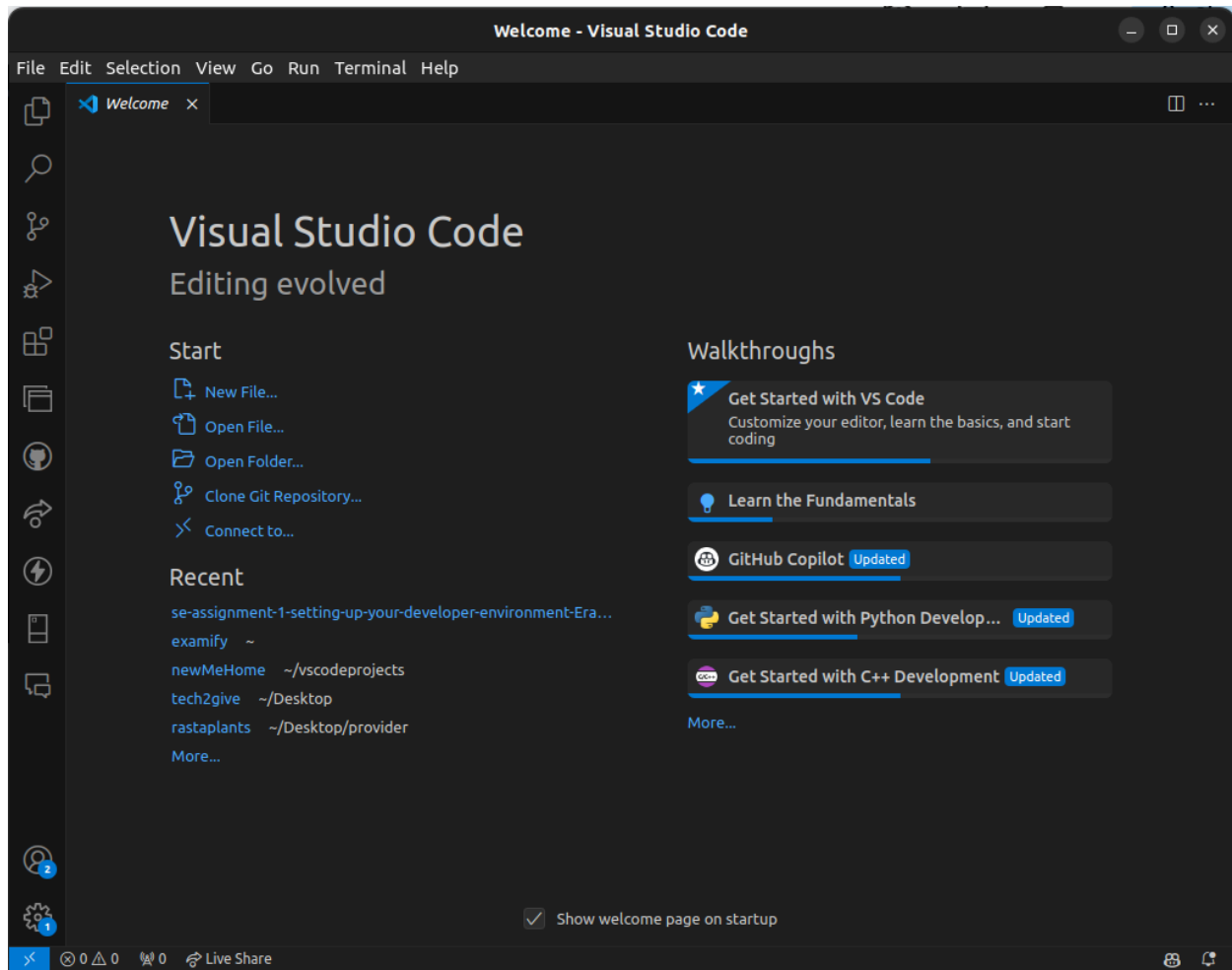
Also from the desktop when I search



You can now open it to test . just use your terminal and open it



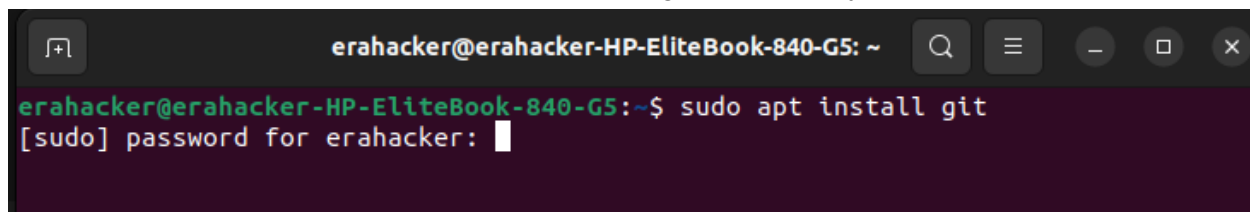
```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ code  
erahacker@erahacker-HP-EliteBook-840-G5:~$
```



3. Set Up Version Control System:

Install Git and configure it on your local machine. Create a GitHub account for hosting your repositories. Initialize a Git repository for your project and make your first commit.
<https://github.com>

- a. Run this command in the terminal to install git . and enter your password



- b. Check git version to confirm installation



```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ git --version  
git version 2.34.1  
erahacker@erahacker-HP-EliteBook-840-G5:~$
```

- c. Create github account and create a new repository , enter the repository name , set it as either public or private depending on your needs

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)


Required fields are marked with an asterisk (*).


Owner *  Erasto-M / **Repository name ***

✔ Your new repository will be created as **Developer-Environment-setup**.
The repository name can only contain ASCII letters, digits, and the characters ., -, and _.

Great repository names are short and memorable. Need inspiration? How about **vigilant-engine** ?

Description (optional)

☒  **Public**
Anyone on the internet can see this repository. You choose who can commit.

☐  **Private**
You choose who can see and commit to this repository.

Initialize this repository with:


☐ **Add a README file**
This is where you can write a long description for your project. [Learn more about READMEs.](#)

Add .gitignore

Choose which files not to track from a list of templates. [Learn more about ignoring files.](#)

Choose a license

A license tells others what they can and can't do with your code. [Learn more about licenses.](#)

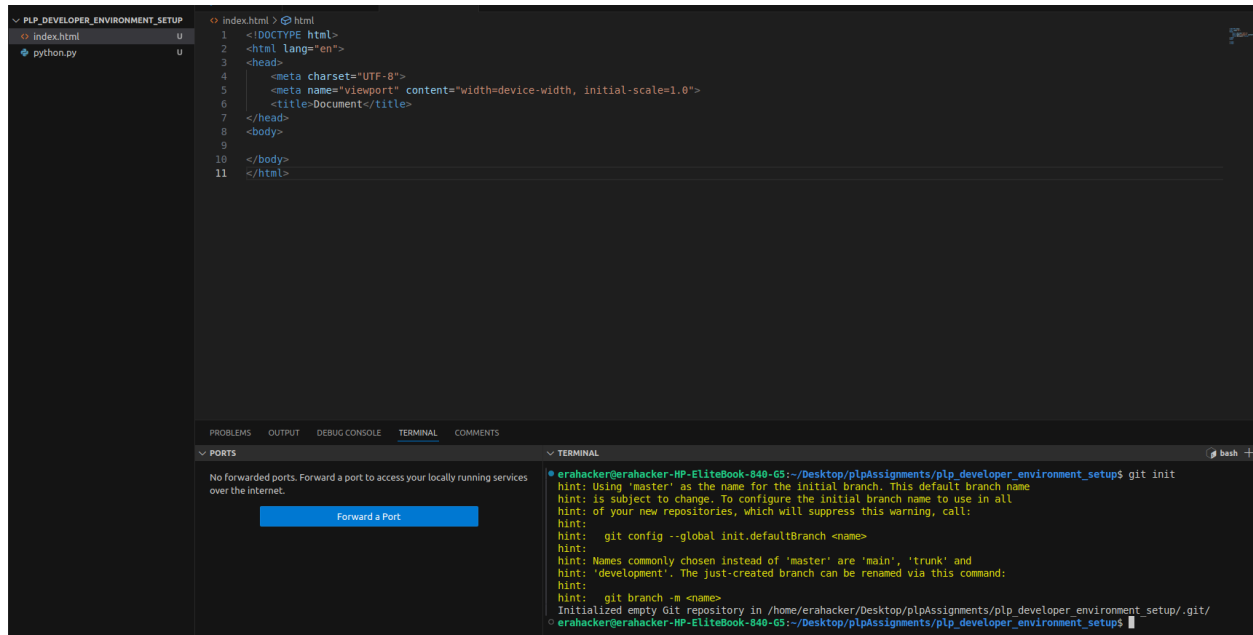
 You are creating a public repository in your personal account.

[Create repository](#)

- d. Create a folder and open it in vscode , add files to it and then push to Github

```
erahacker@erahacker-HP-EliteBook-840-G5: ~/Desktop/plpA...
erahacker@erahacker-HP-EliteBook-840-G5:~$ cd ../erahacker/Desktop
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop$ plpAssignments/
bash: plpAssignments/: Is a directory
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop$ cd plpAssignments/
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments$ mkdir plp_deve
loper_environment_setup
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments$ cd plp_develop
er_environment_setup/
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_e
nvironment_setup$ code .
```

Open it in visual studio code and create two files and then initialize the github repository



The screenshot shows the Visual Studio Code interface. On the left, the Explorer sidebar shows a folder named 'PLP_DEVELOPER_ENVIRONMENT_SETUP' containing two files: 'index.html' and 'python.py'. The main editor area displays the content of 'index.html', which is a basic HTML document structure. At the bottom, the TERMINAL panel is active, showing the output of the following commands:

```
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:   git config --global init.defaultBranch <name>
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:   git branch -m <name>
Initialized empty Git repository in /home/erahacker/Desktop/plpAssignments/plp_developer_environment_setup/.git/
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$
```

Add the files to tracking , make commits and finally push to the repository you had created in github

```
▼ TERMINAL
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git add .
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git commit -m "Created Plp dev
eloper environment setup"
[master (root-commit) 6c34c93] Created Plp developer environment setup
 2 files changed, 11 insertions(+)
 create mode 100644 index.html
 create mode 100644 python.py
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git remote add origin https://
github.com/Erasto-M/Developer-Environment-setup.git
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git push -u origin main
error: src refspec main does not match any
error: failed to push some refs to 'https://github.com/Erasto-M/Developer-Environment-setup.git'
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git remote add origin https://
github.com/Erasto-M/Developer-Environment-setup.git
error: remote origin already exists.
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git push -u -f origin main
error: src refspec main does not match any
error: failed to push some refs to 'https://github.com/Erasto-M/Developer-Environment-setup.git'
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git branch -M main
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git push -u origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 432 bytes | 216.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Erasto-M/Developer-Environment-setup.git
 * [new branch]      main -> main
Branch 'main' set up to track remote branch 'main' from 'origin'.
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$
```

I faced some challenges , had not set the branch main to my local repository , that's why I set it after the second error

```
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git branch -M main
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$ git push -u origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 432 bytes | 216.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Erasto-M/Developer-Environment-setup.git
 * [new branch]      main -> main
Branch 'main' set up to track remote branch 'main' from 'origin'.
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/plpAssignments/plp_developer_environment_setup$
```

4. Install Necessary Programming Languages and Runtimes:

Instal Python from <http://www.python.org> programming language required for your project and install their respective compilers, interpreters, or runtimes. Ensure you have the necessary tools to build and execute your code.

- a. Install python in ubuntu using the terminal and its respective installer

```
erahacker@erahacker-HP-EliteBook-840-G5: ~
erahacker@erahacker-HP-EliteBook-840-G5:~$ sudo apt install python3 python3-pip
[sudo] password for erahacker:
```

- b. Validate their Installation

```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ python3 --version  
Python 3.10.12  
erahacker@erahacker-HP-EliteBook-840-G5:~$ pip3 --version  
pip 24.0 from /home/erahacker/.local/lib/python3.10/site-packages/pip (python 3.10)  
erahacker@erahacker-HP-EliteBook-840-G5:~$
```

c. Install Virtual environment using this command

```
erahacker@erahacker-HP-EliteBook-840-G5:~$ sudo pip3 install virtualenv  
[sudo] password for erahacker:
```

d. Validate its installation

```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ virtualenv --version  
virtualenv 20.26.2 from /home/erahacker/.local/lib/python3.10/site-packages/virtualenv/__init__.py  
erahacker@erahacker-HP-EliteBook-840-G5:~$
```

5. Install Package Managers:

If applicable, install package managers like pip (Python).

Already installed using the procedure above for installing python

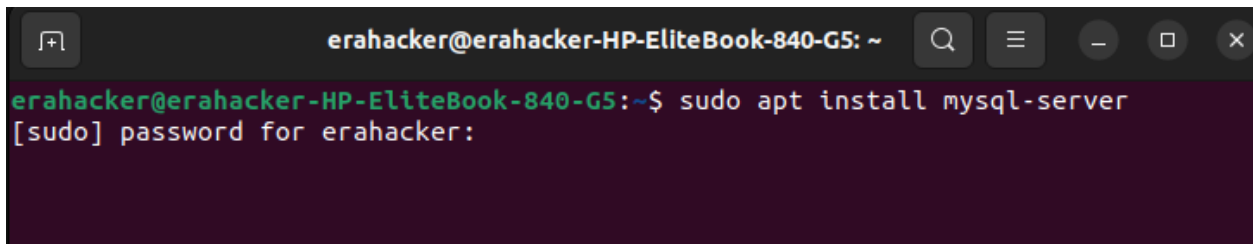
```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ sudo apt install python3 python3-pip  
[sudo] password for erahacker:
```

```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ pip --version  
pip 24.0 from /home/erahacker/.local/lib/python3.10/site-packages/pip (python 3.10)  
erahacker@erahacker-HP-EliteBook-840-G5:~$
```

6. Configure a Database (MySQL):

Download and install MySQL database

- a. Install by running this command the terminal

A terminal window with a dark background. The title bar shows 'erahacker@erahacker-HP-EliteBook-840-G5: ~'. The prompt is 'erahacker@erahacker-HP-EliteBook-840-G5:~\$'. The command 'sudo apt install mysql-server' has been entered. The prompt has changed to '[sudo] password for erahacker:' and the cursor is at the end of the line.

```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ sudo apt install mysql-server  
[sudo] password for erahacker:
```

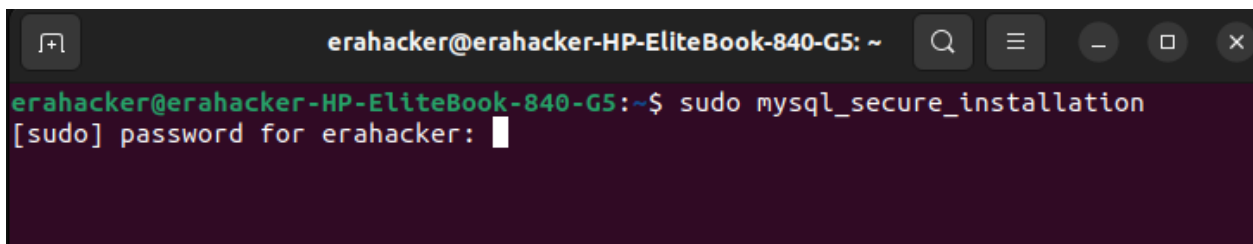
- b. Configure MySQL Server:

During the installation process, you will be prompted to set a root password for MySQL.

Choose a strong password and remember it.

- c. Secure MySQL Installation (Optional but Recommended):

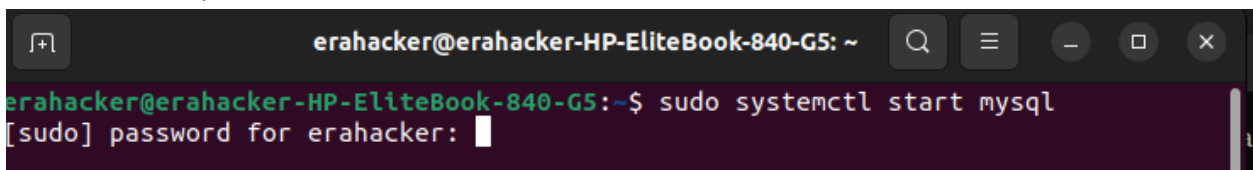
MySQL comes with a script to secure the installation. Run the following command and follow the prompts to secure your MySQL installation:

A terminal window with a dark background. The title bar shows 'erahacker@erahacker-HP-EliteBook-840-G5: ~'. The prompt is 'erahacker@erahacker-HP-EliteBook-840-G5:~\$'. The command 'sudo mysql_secure_installation' has been entered. The prompt has changed to '[sudo] password for erahacker:' and the cursor is at the end of the line.

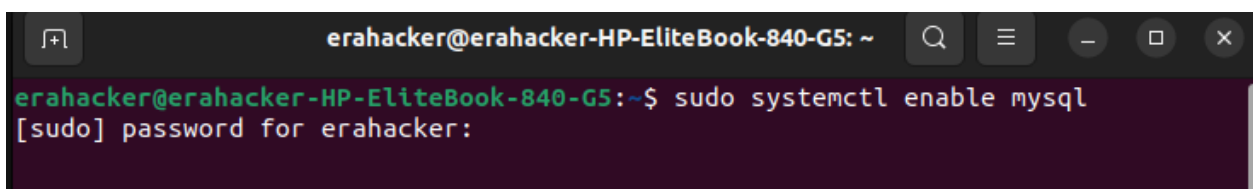
```
erahacker@erahacker-HP-EliteBook-840-G5:~$ sudo mysql_secure_installation  
[sudo] password for erahacker:
```

- d. Start and Enable MySQL Service:

After installation, MySQL should start automatically. If it's not started, you can start it manually and enable it to start on boot:

A terminal window with a dark background. The title bar shows 'erahacker@erahacker-HP-EliteBook-840-G5: ~'. The prompt is 'erahacker@erahacker-HP-EliteBook-840-G5:~\$'. The command 'sudo systemctl start mysql' has been entered. The prompt has changed to '[sudo] password for erahacker:' and the cursor is at the end of the line.

```
erahacker@erahacker-HP-EliteBook-840-G5:~$ sudo systemctl start mysql  
[sudo] password for erahacker:
```

A terminal window with a dark background. The title bar shows 'erahacker@erahacker-HP-EliteBook-840-G5: ~'. The prompt is 'erahacker@erahacker-HP-EliteBook-840-G5:~\$'. The command 'sudo systemctl enable mysql' has been entered. The prompt has changed to '[sudo] password for erahacker:' and the cursor is at the end of the line.

```
erahacker@erahacker-HP-EliteBook-840-G5:~$ sudo systemctl enable mysql  
[sudo] password for erahacker:
```

- e. Validate installation of mysql

```
erahacker@erahacker-HP-EliteBook-840-G5: ~  
erahacker@erahacker-HP-EliteBook-840-G5:~$ mysql --version  
mysql Ver 8.0.36-0ubuntu0.22.04.1 for Linux on x86_64 ((Ubuntu))  
erahacker@erahacker-HP-EliteBook-840-G5:~$
```

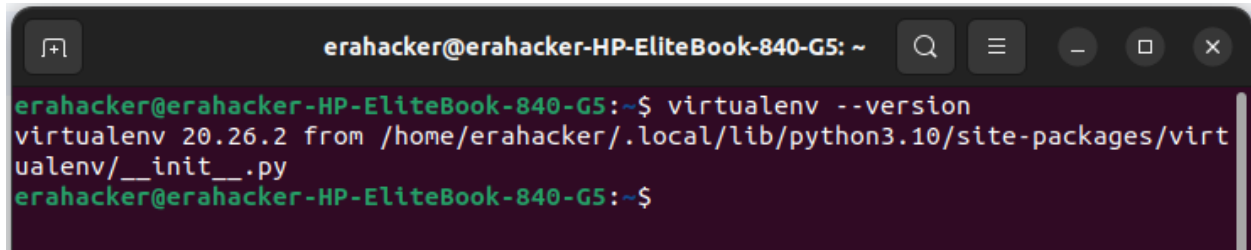
- f. Open MySQL and start Using it

```
erahacker@erahacker-HP-EliteBook-840-G5:~$ sudo mysql -u root -p  
[sudo] password for erahacker:  
Enter password:  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 8  
Server version: 8.0.36-0ubuntu0.22.04.1 (Ubuntu)  
  
Copyright (c) 2000, 2024, Oracle and/or its affiliates.  
  
Oracle is a registered trademark of Oracle Corporation and/or its  
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  
-> ;  
+-----+  
| Database |  
+-----+  
| information_schema |  
| joins |  
| mysql |  
| performance_schema |  
| plp_Academy |  
| sys |  
+-----+  
6 rows in set (0.01 sec)  
  
mysql>
```

7. Set Up Development Environments and Virtualization (Optional):


Consider using virtualization tools like Docker or virtual machines to isolate project dependencies and ensure consistent environments across different machines.

In my case i have installed virtual machine

A terminal window with a dark background. The title bar shows 'erahacker@erahacker-HP-EliteBook-840-G5: ~'. The prompt is 'erahacker@erahacker-HP-EliteBook-840-G5:~\$'. The command 'virtualenv --version' has been entered, and the output is 'virtualenv 20.26.2 from /home/erahacker/.local/lib/python3.10/site-packages/virtualenv/__init__.py'.

```
erahacker@erahacker-HP-EliteBook-840-G5:~$ virtualenv --version
virtualenv 20.26.2 from /home/erahacker/.local/lib/python3.10/site-packages/virtualenv/__init__.py
erahacker@erahacker-HP-EliteBook-840-G5:~$
```

Using the virtual machine to isolate project dependencies

A terminal window with a dark background. The title bar shows 'erahacker@erahacker-HP-EliteBook-840-G5: ~/Desktop/DjangoProjects'. The prompt is 'erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/DjangoProjects\$'. The command 'ls' has been entered, and the output is 'plp_project plp_venv'. Then the command 'source plp_venv/bin/activate' has been entered, and the prompt has changed to '(plp_venv) erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/DjangoProjects\$'. Finally, the command 'ls' has been entered again, and the output is 'plp_project plp_venv'.

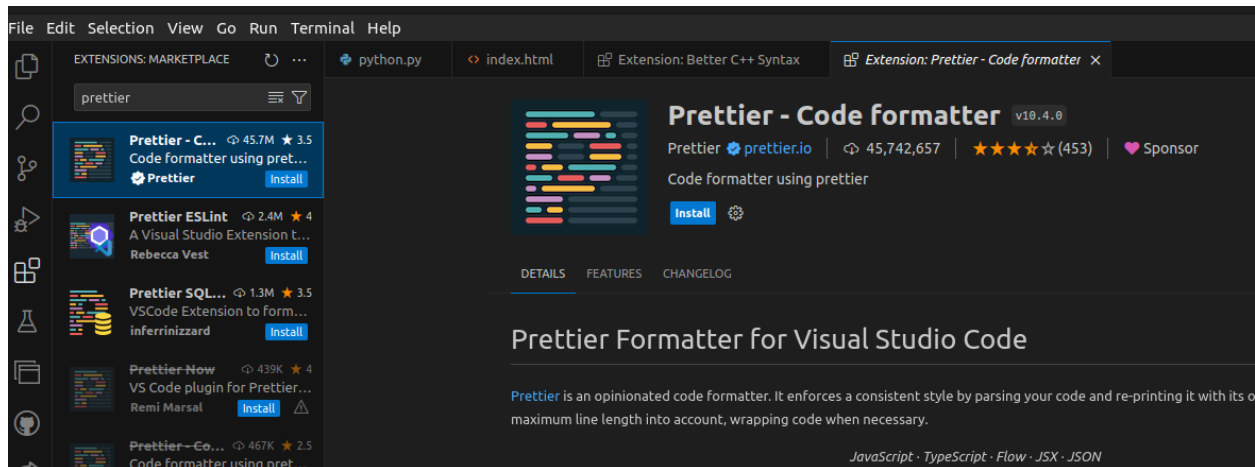
```
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/DjangoProjects$ ls
plp_project  plp_venv
erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/DjangoProjects$ source plp_venv/bin/activate
(plp_venv) erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/DjangoProjects$ ls
plp_project  plp_venv
(plp_venv) erahacker@erahacker-HP-EliteBook-840-G5:~/Desktop/DjangoProjects$
```

8. Explore Extensions and Plugins:

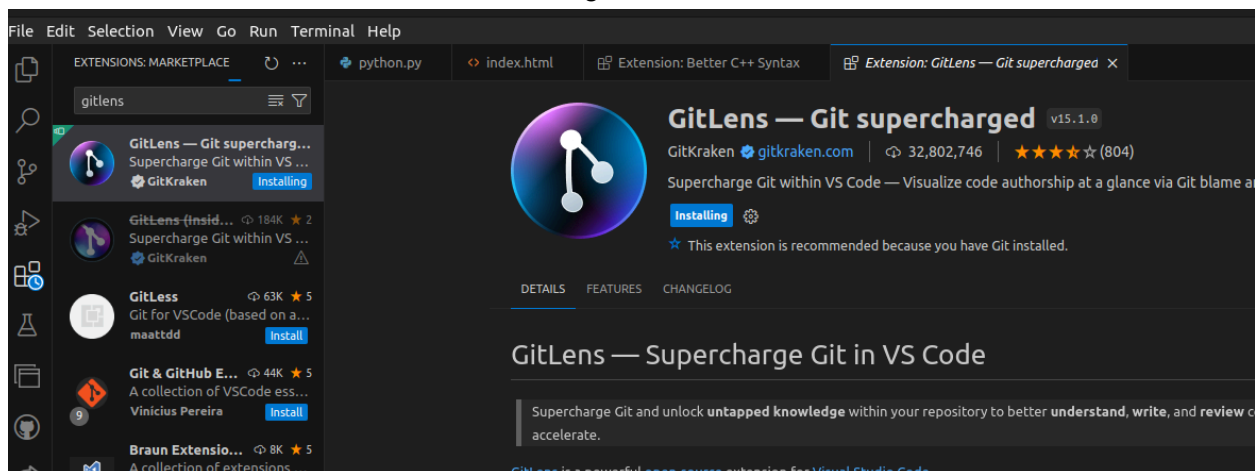
Explore available extensions, plugins, and add-ons for your chosen text editor or IDE to enhance functionality, such as syntax highlighting, linting, code formatting, and version control integration.

"In Visual Studio Code, open the Extensions sidebar and search for plugins to enhance functionality like syntax highlighting, linting, code formatting, and version control integration."

- a. Prettier for code formatting



b. Gitlens for version control integration



c. ESLint for linting

