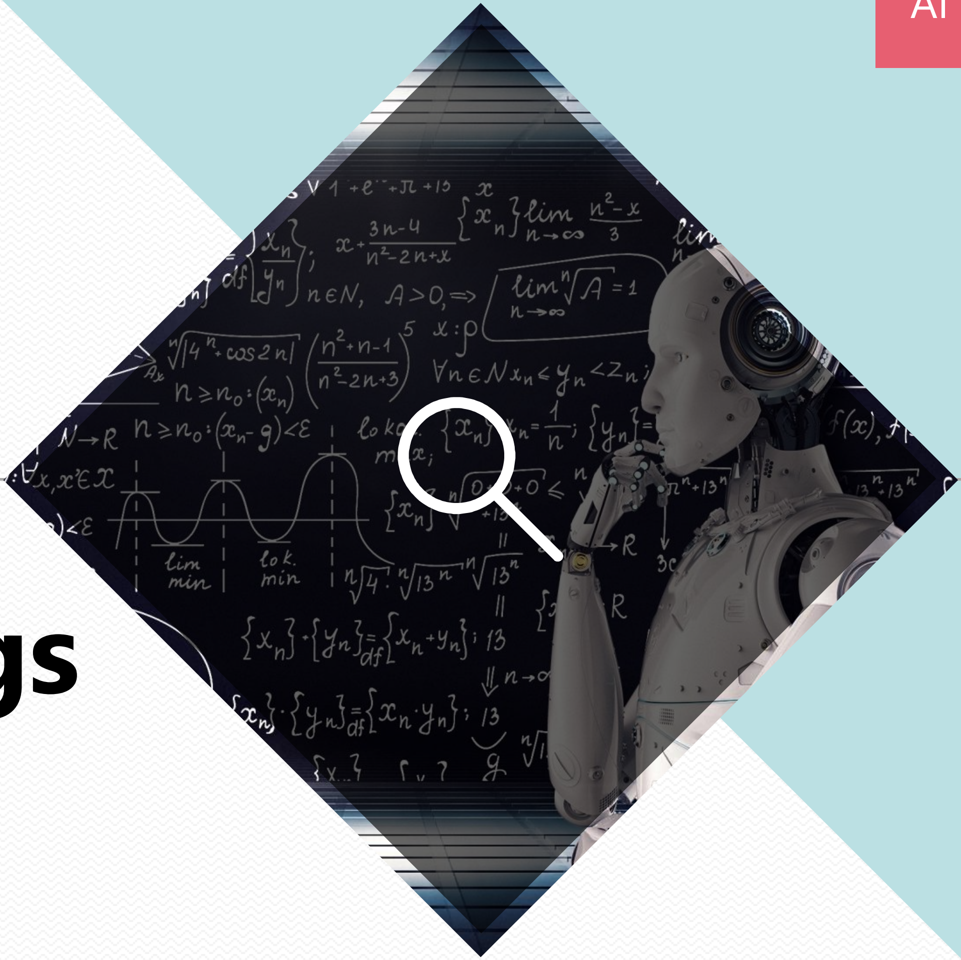
AI TRAINING SERIES



Environment Settings

Basic Ubuntu Packages

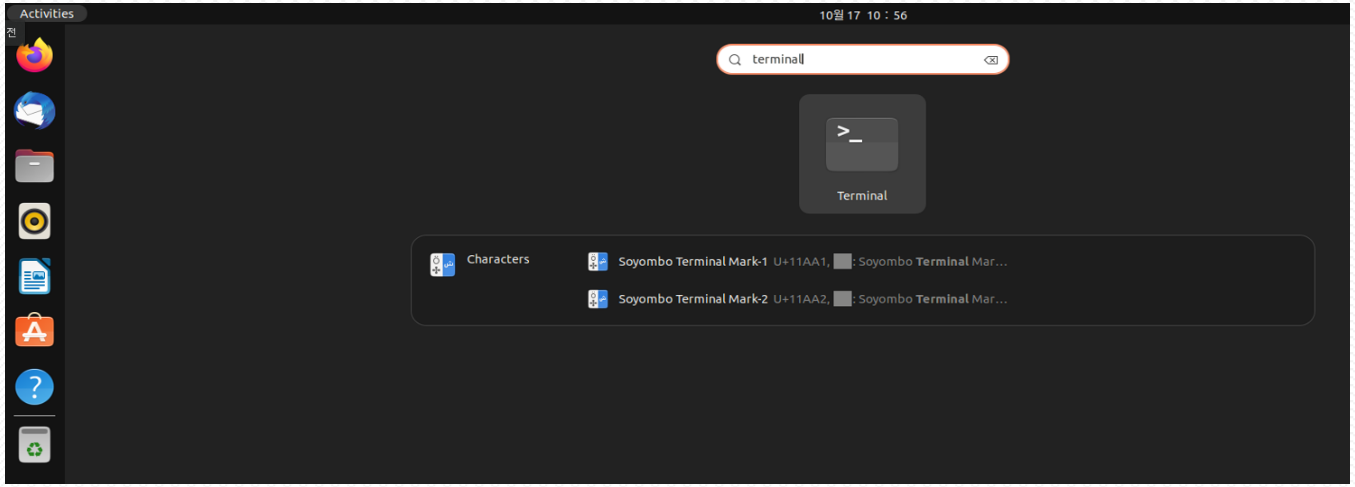
Agenda

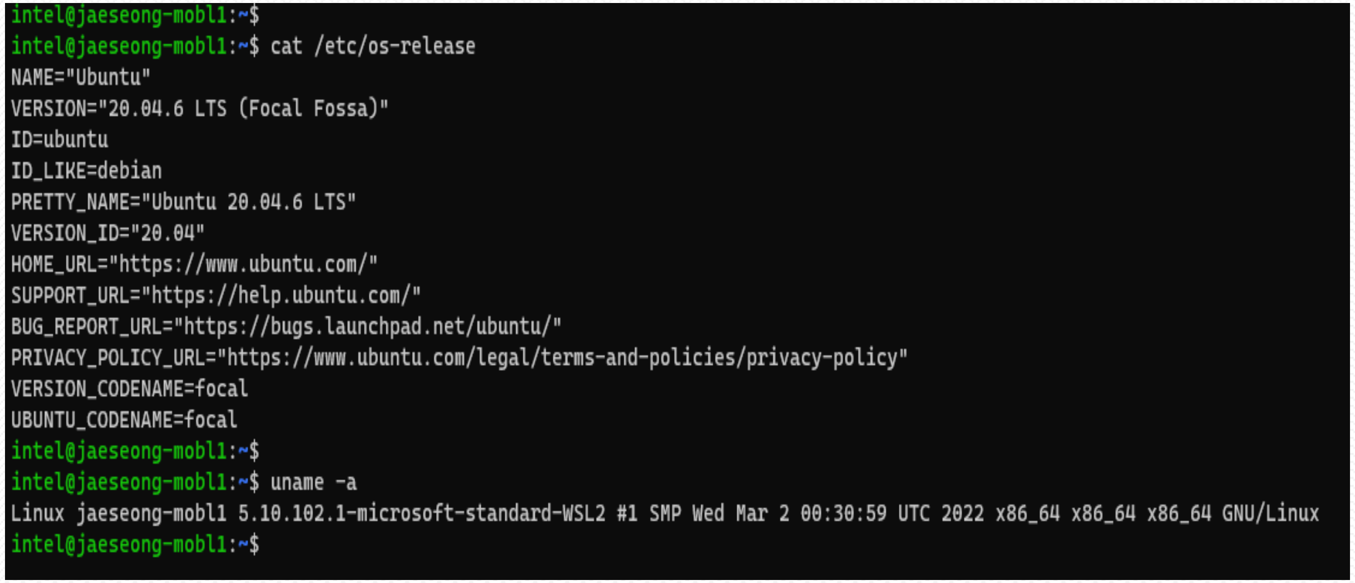
- *Basic Check*
- *Setup the Basic Environment*
- *Github Repository*
- *Install the Additional Packages*
  - *Visual Studio Code*
  - *Virtual Environment (venv)*
  - *OpenVINO*
  - *Another Python Version*
  - *Kernel Version Change*

Basic Check

Ubuntu Information

- Open Terminal
- Input command below
  - $ cat /etc/os-release
  - $ uname -a

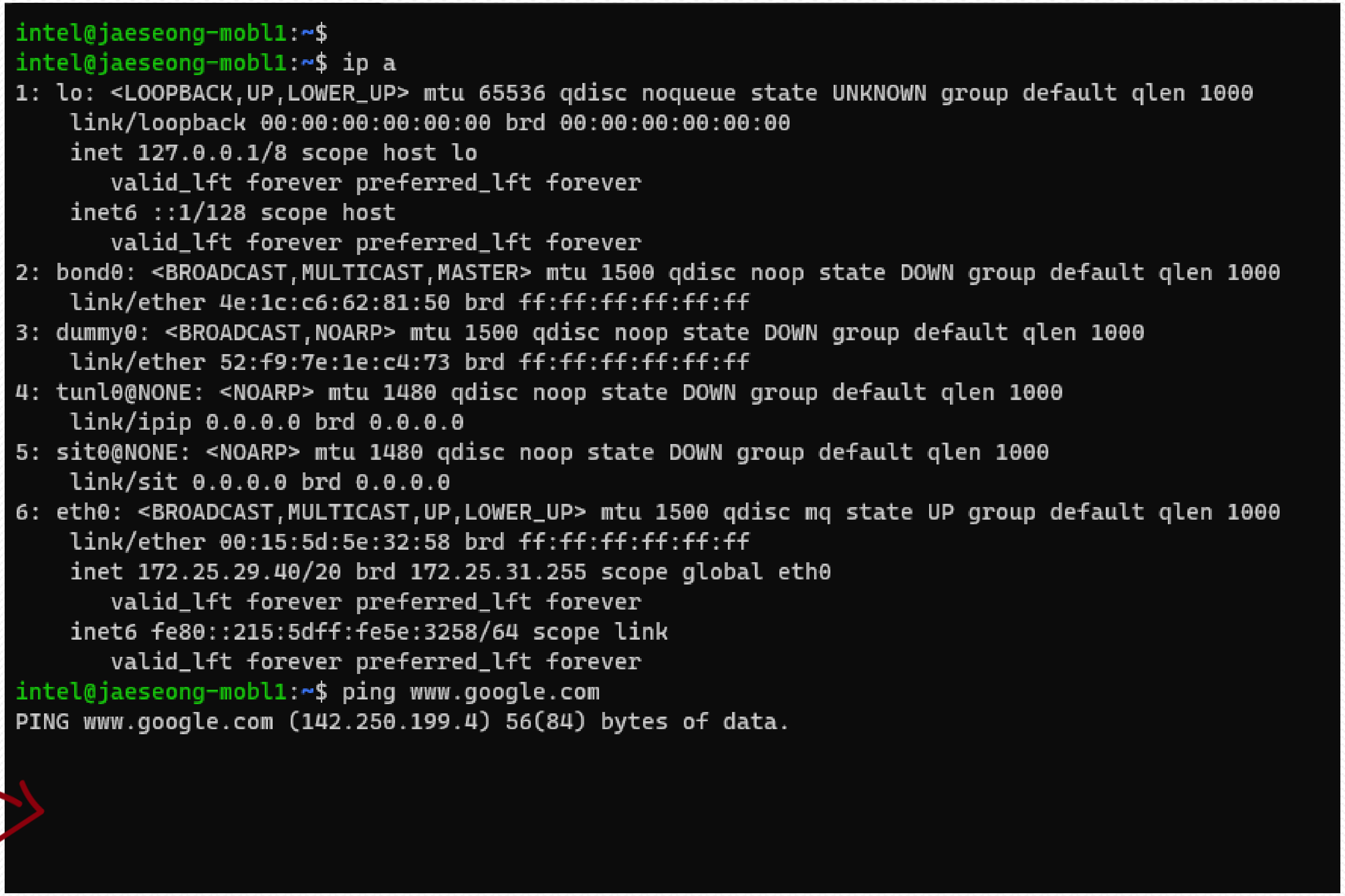

Activities
10월 17 10 : 56
terminal
Terminal
Characters
Soyombo Terminal Mark-1 U+11AA1, : Soyombo Terminal Mar...
Soyombo Terminal Mark-2 U+11AA2, : Soyombo Terminal Mar...



```
intel@jaeseong-mobl1:~$
intel@jaeseong-mobl1:~$ cat /etc/os-release
NAME="Ubuntu"
VERSION="20.04.6 LTS (Focal Fossa)"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 20.04.6 LTS"
VERSION_ID="20.04"
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
VERSION_CODENAME=focal
UBUNTU_CODENAME=focal
intel@jaeseong-mobl1:~$
intel@jaeseong-mobl1:~$ uname -a
Linux jaeseong-mobl1 5.10.102.1-microsoft-standard-WSL2 #1 SMP Wed Mar 2 00:30:59 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
intel@jaeseong-mobl1:~$
```

Network Checking

- Open Terminal
- Input command below
  - $ ip a
  - $ ping www.google.com



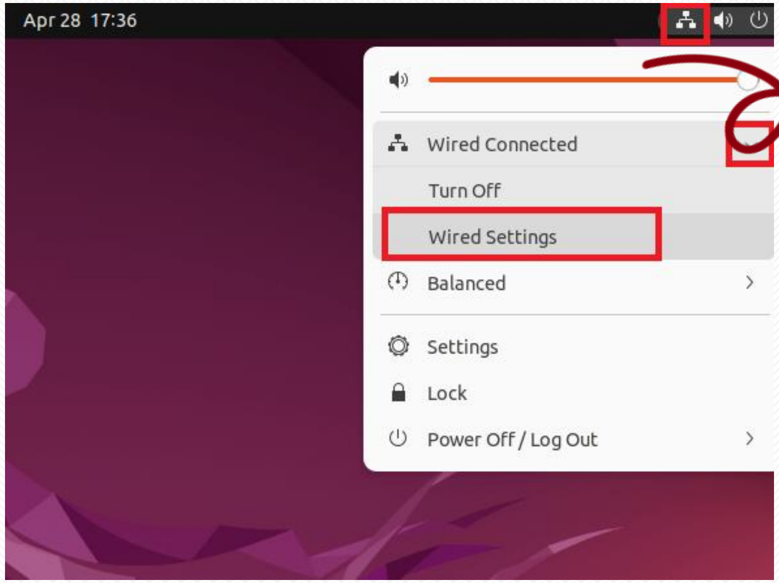
```
intel@jaeseong-mobl1:~$
intel@jaeseong-mobl1:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: bond0: <BROADCAST,MULTICAST,MASTER> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 4e:1c:c6:62:81:50 brd ff:ff:ff:ff:ff:ff
3: dummy0: <BROADCAST,NOARP> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 52:f9:7e:1e:c4:73 brd ff:ff:ff:ff:ff:ff
4: tunl0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group default qlen 1000
    link/ipip 0.0.0.0 brd 0.0.0.0
5: sit0@NONE: <NOARP> mtu 1480 qdisc noop state DOWN group default qlen 1000
    link/sit 0.0.0.0 brd 0.0.0.0
6: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc mq state UP group default qlen 1000
    link/ether 00:15:5d:5e:32:58 brd ff:ff:ff:ff:ff:ff
    inet 172.25.29.40/20 brd 172.25.31.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::215:5dff:fe5e:3258/64 scope link
       valid_lft forever preferred_lft forever
intel@jaeseong-mobl1:~$ ping www.google.com
PING www.google.com (142.250.199.4) 56(84) bytes of data.
```

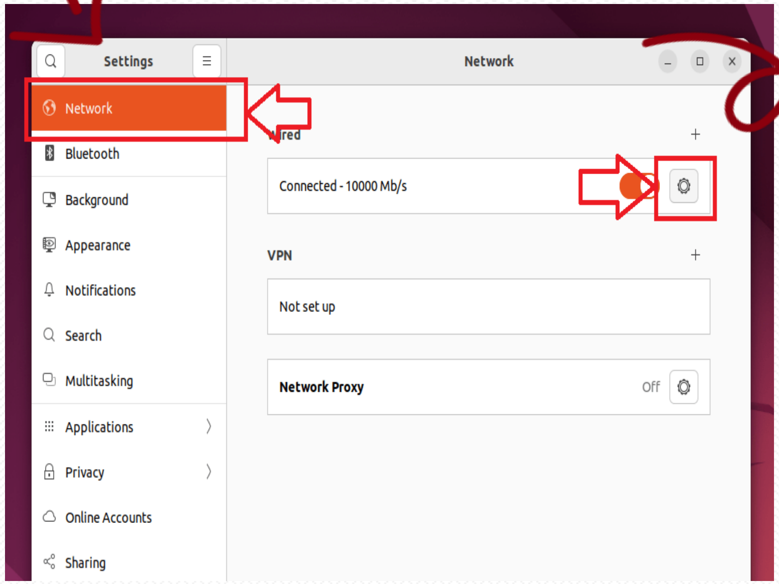
Network is disabled,,

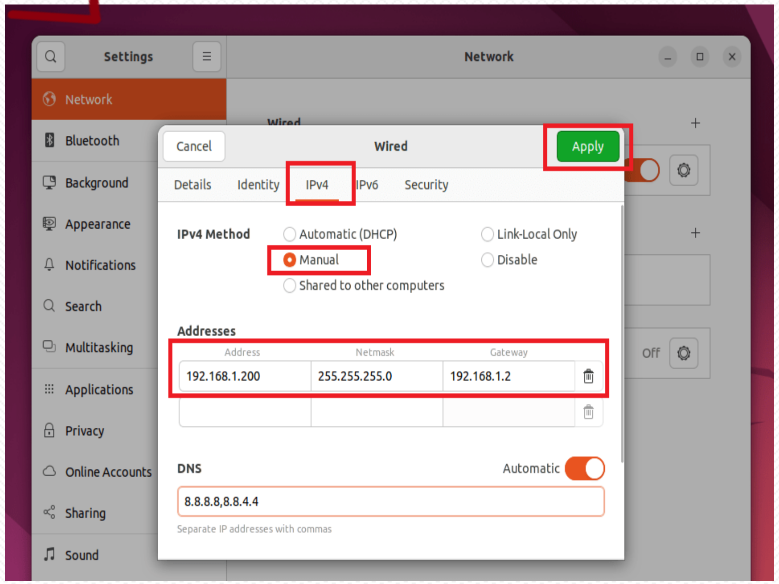
Setup the Basic Environment

Network Setting(for Static IP)

- Need to set the Static IP through the settings







IPv4 Method: ○ Automatic (DHCP) ● Manual ○ Shared to other computers ○ Link-Local Only ○ Disable

Addresses

Address	Netmask	Gateway
192.168.1.200	255.255.255.0	192.168.1.2

DNS Automatic

8.8.8.8,8.8.4.4

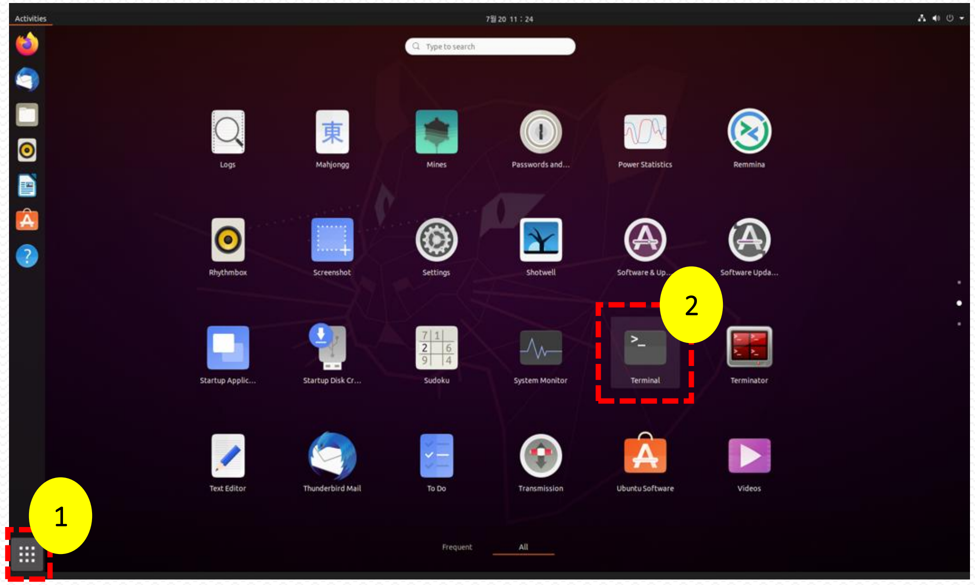
Separate IP addresses with commas

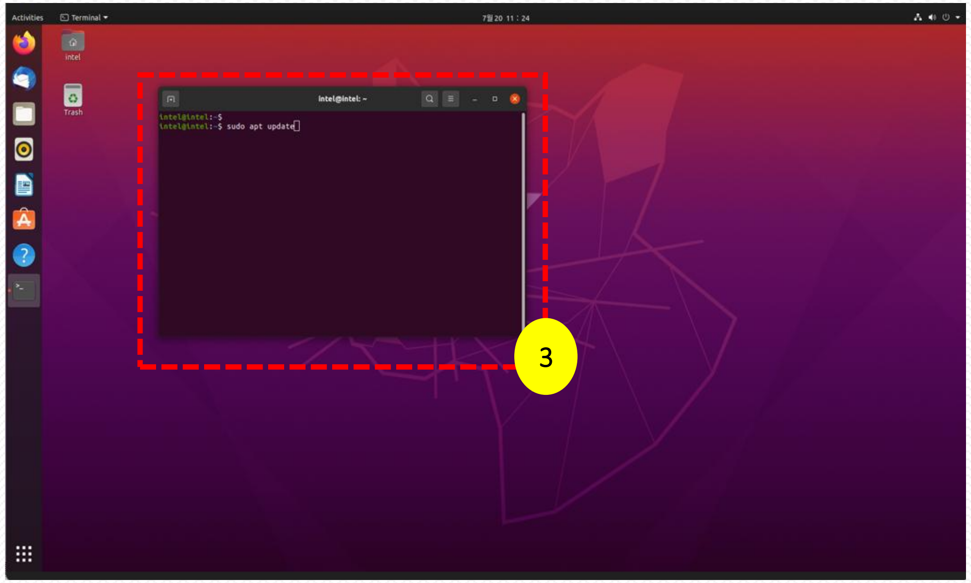
- IP Address
- Subnet Mask
- Gateway
- DNS

apt

- Advanced Packaging Tool on Debian

1. Find the Terminal
2. Execution the Terminal
3. Input the command below
   - $ sudo apt update
   - $ sudo apt upgrade -y





```
intel@intel:~$
intel@intel:~$ sudo apt update
```

Basic Packages

- Try to install the basic packages for the hands-on
  - `$ sudo apt install <package name> …`

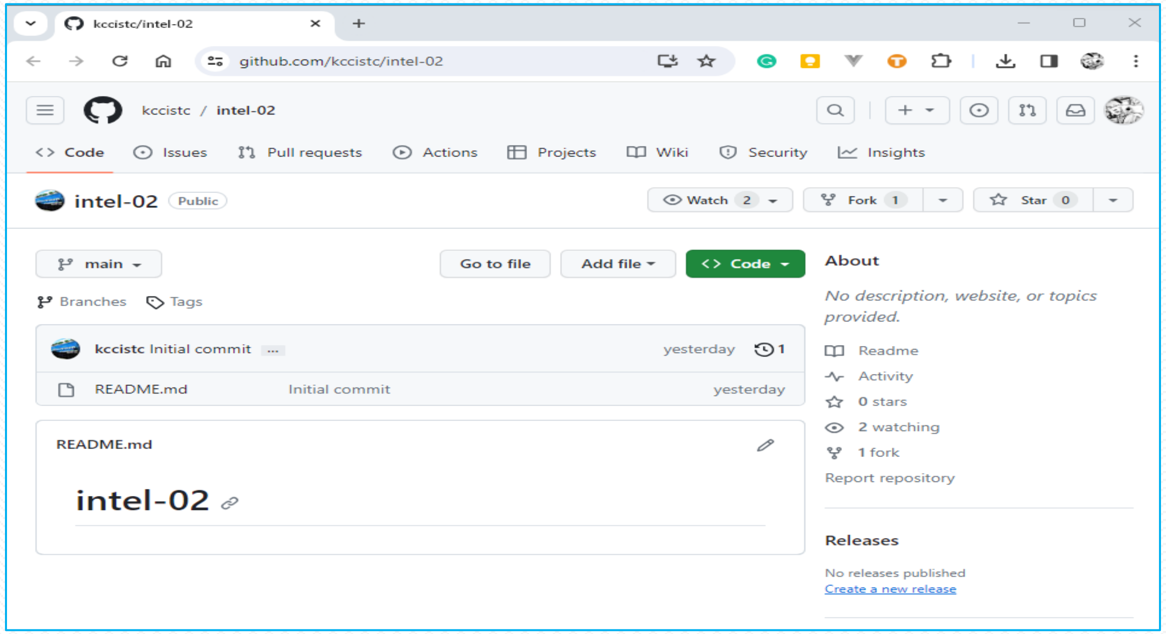
- Input the command below

  -
    ```
    $ sudo apt install -y build-essential software-properties-common vim terminator gcc git git-all make cmake htop net-tools tree mplayer mesa-utils intel-opencl-icd python3-dev python3-pip python3-setuptools python3-venv
    ```

Github Repository

Git Clone

- Clone the skeleton code for hands-on (https://github.com/kccistc/intel-02)



- Open the terminal and input command below,
  - $ git clone https://github.com/kccistc/intel-02.git
  - $ cd intel-02
  - $ ls -al

Install the Additional Packages

Visual Studio Code

- Pre-packages Install

```
$ sudo apt update
$ sudo apt install software-properties-common apt-transport-https wget
```

- Get Microsoft GPG key

```
$ wget -q https://packages.microsoft.com/keys/microsoft.asc -O- | sudo apt-key add -
```

- Add the apt repository for VSC

```
$ sudo add-apt-repository “deb [arch=amd64] https://packages.microsoft.com/repos/vscode stable main”
```

- VSC install

```
$ sudo apt install code
```

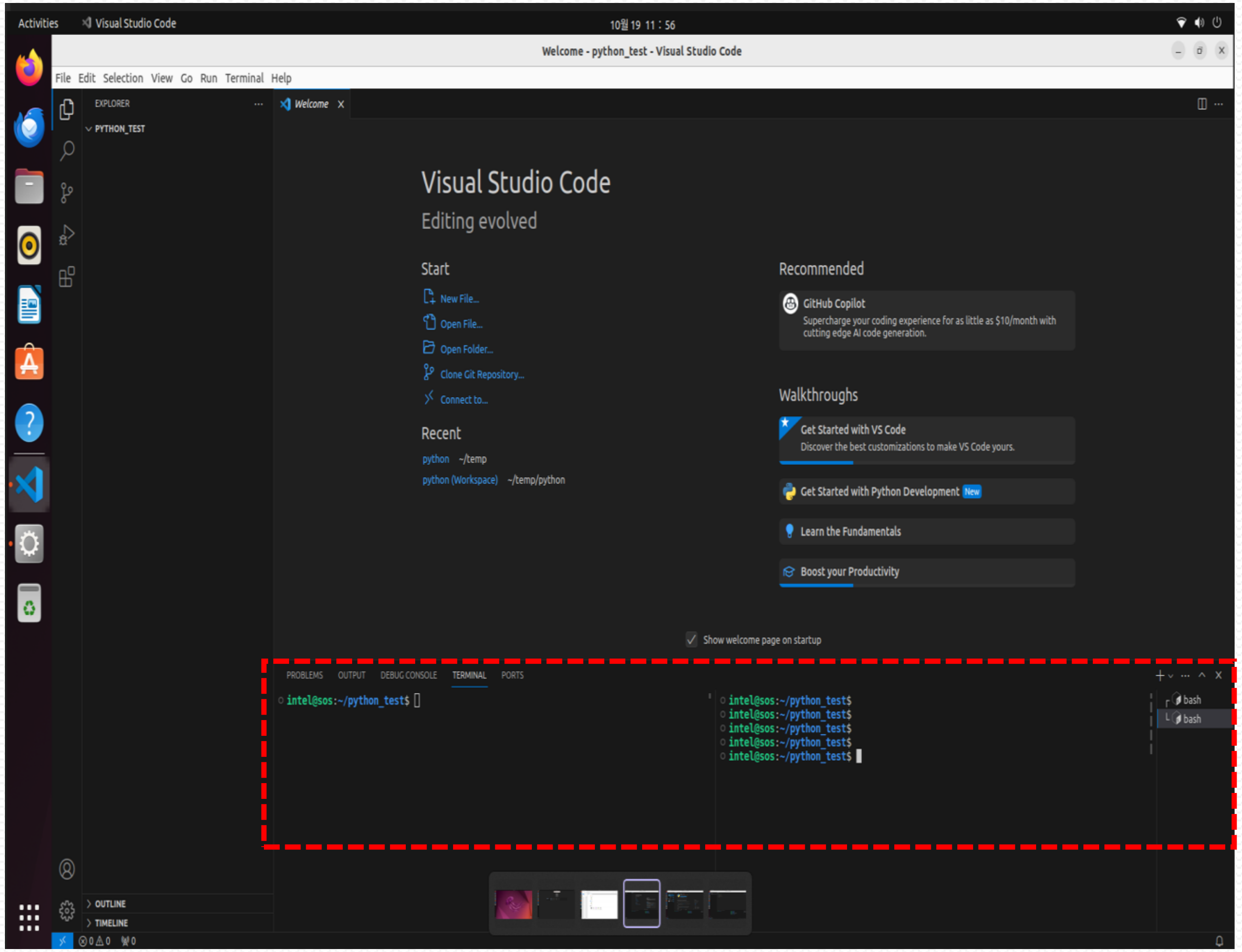
- Execution the VSC

```
$ code
```

Visual Studio Code (cont,)

- For Workspace change, open the terminator,
    - $ mkdir -p python_test
    - $ cd python_test
    - $ code .

- When input “Ctrl + j”, you can see the terminal below
- At that time, input “Ctrl + Shift + 5”, can see divided terminals



Supercharge your coding experience for as little as $10/month with cutting edge AI code generation.

Discover the best customizations to make VS Code yours.

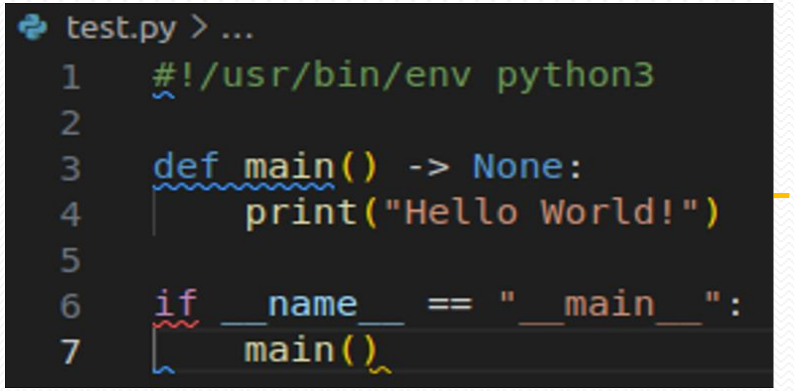
```
intel@sos:~/python_test$
```

```
intel@sos:~/python_test$
intel@sos:~/python_test$
intel@sos:~/python_test$
intel@sos:~/python_test$
intel@sos:~/python_test$
```

Visual Studio Code (cont,)

- Install the Extensions
  - Python Extension Pack
  - Flake8
  - pylint
  - isort

- $ touch test.py
- Typing the codes below



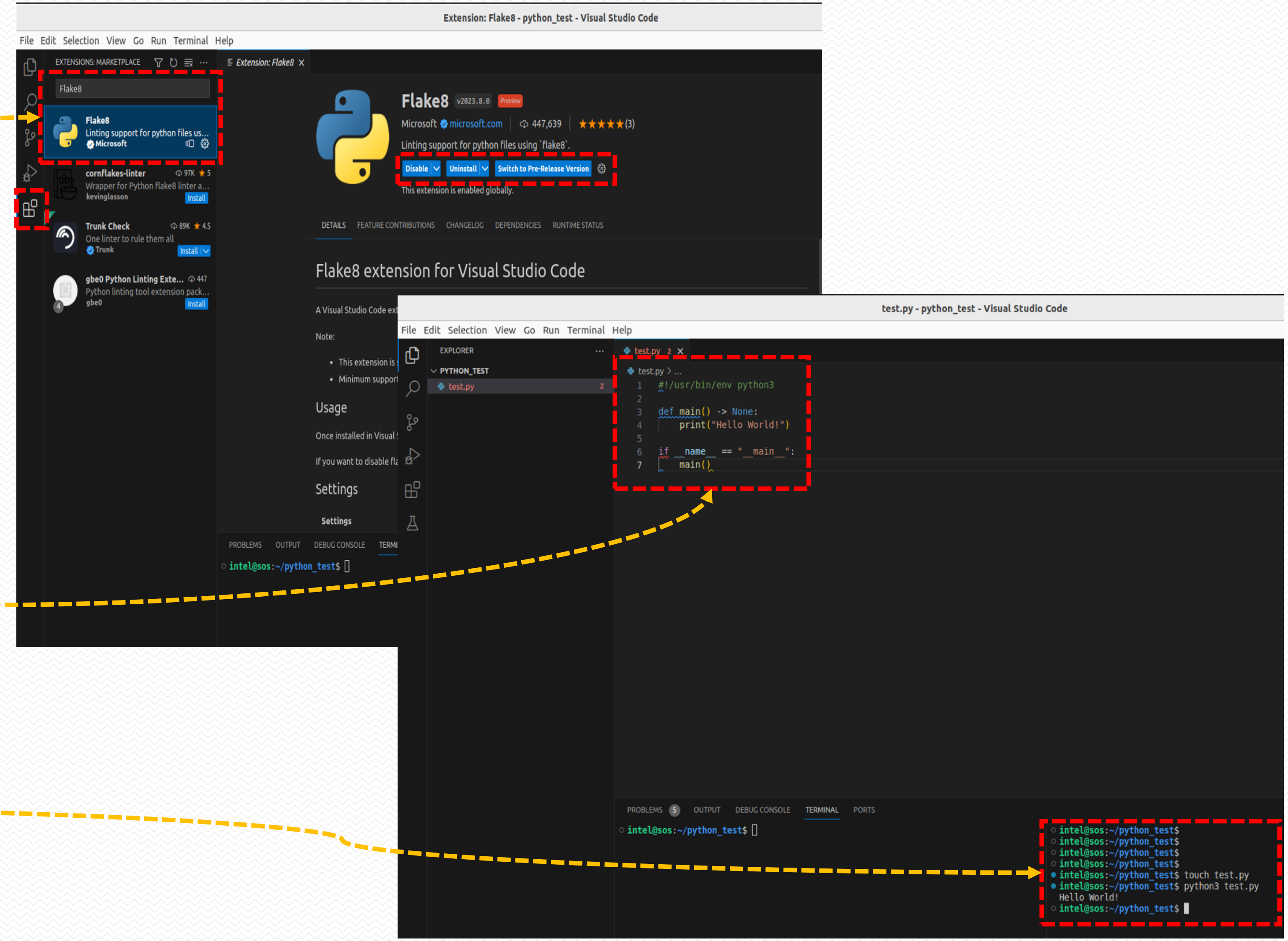
test.py > ...

```python
#!/usr/bin/env python3

def main() -> None:
    print("Hello World!")

if __name__ == "__main__":
    main()
```

- $ python3 test.py



Extension: Flake8 - python_test - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXTENSIONS: MARKETPLACE
Extension: Flake8

Flake8

Flake8 Linting support for python files us... Microsoft

cornflakes-linter 97K ★ 5 Wrapper for Python flake8 linter a... kevinglasson Install

Trunk Check 89K ★ 4.5 One linter to rule them all Trunk Install

gbe0 Python Linting Exte... 447 Python linting tool extension pack... gbe0 Install

Flake8 v2023.8.0 Preview

Microsoft microsoft.com | 447,639 | ★★★★★(3)

Linting support for python files using `flake8`.

This extension is enabled globally.

Flake8 extension for Visual Studio Code

A Visual Studio Code ex

Note:

- This extension is
- Minimum support

Usage

Once installed in Visual

If you want to disable fla

Settings

Settings

```
intel@sos:~/python_test$
```

```python
#!/usr/bin/env python3

def main() -> None:
    print("Hello World!")

if __name__ == "__main__":
    main()
```

```
intel@sos:~/python_test$
```

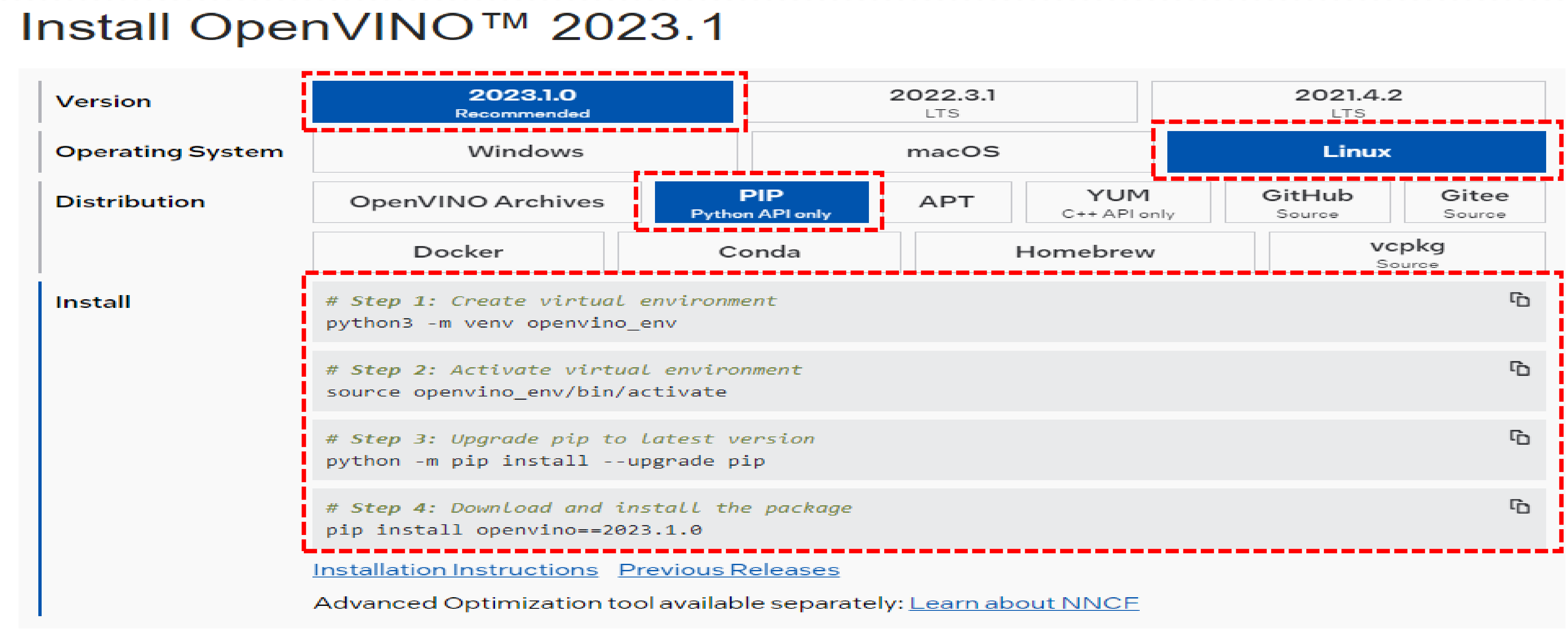
```
intel@sos:~/python_test$
intel@sos:~/python_test$
intel@sos:~/python_test$
intel@sos:~/python_test$
intel@sos:~/python_test$ touch test.py
intel@sos:~/python_test$ python3 test.py
Hello World!
intel@sos:~/python_test$
```

Set Up the Virtual Environment

- Open the Terminator
- Input the command below,
  - $ cd <root_dir>
  - $ python3 -m venv .env
  - $ source .env/bin/activate
  - (.env) $ pip --version
  - (.env) $ pip install --upgrade pip
  - (.env) $ pip install -r requirements.txt
  - (.env) deactivate

Install the OpenVINO

- Open the Google Chrome and search “openvino install”
- Try to install the OpenVINO (Latest 2023.1) https://docs.openvino.ai/2023.1/openvino_docs_install_guides_overview.html?VERSION=v_2023_1_0&OP_SYSTEM=LINUX&DISTRIBUTION=PIP



Install OpenVINO™ 2023.1

Version: 2023.1.0 Recommended

Operating System: Linux

Distribution: PIP Python API only

Install

```
# Step 1: Create virtual environment
python3 -m venv openvino_env
```

```
# Step 2: Activate virtual environment
source openvino_env/bin/activate
```

```
# Step 3: Upgrade pip to latest version
python -m pip install --upgrade pip
```

```
# Step 4: Download and install the package
pip install openvino==2023.1.0
```

Installation Instructions   Previous Releases

Advanced Optimization tool available separately: Learn about NNCF

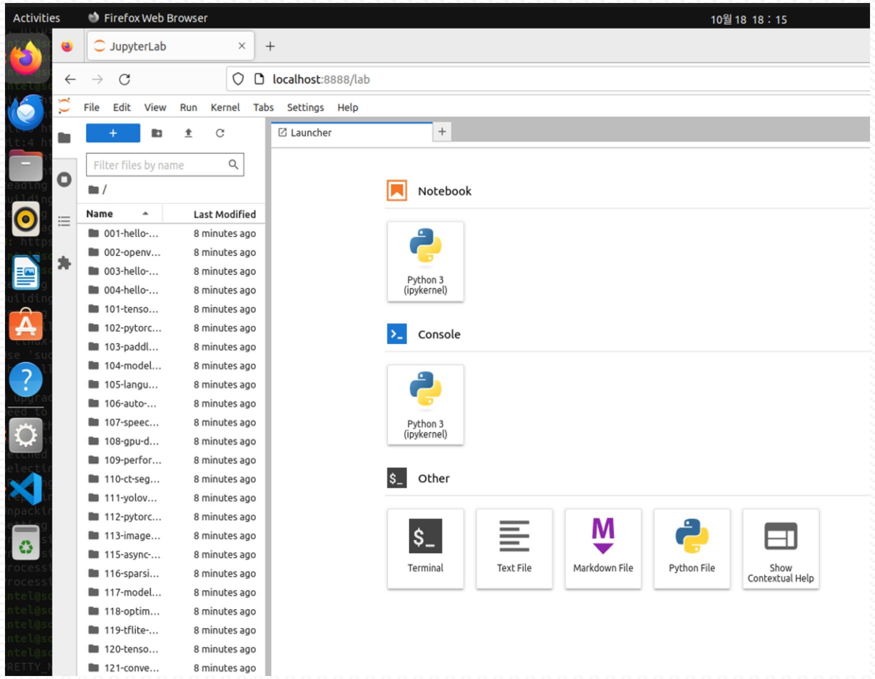
Install the OpenVINO (cont,)

- Open the Terminator
- Input the command below,

  ```
  $ mkdir openvino && cd openvino
  $ python3 -m venv .openvino_env
  $ source .openvino_env/bin/activate
  (.openvino_env) $ pip install --upgrade pip
  (.openvino_env) $ pip install openvino==2023.1.0
  ```

Install the OpenVINO (for Jupyter Notebook)

- Input the command below,
  - (.openvino_env) $ git clone --depth=1 https://github.com/openvinotoolkit/openvino_notebooks.git
  - (.openvino_env) $ cd openvino_notebooks
  - (.openvino_env) $ pip install -U pip
  - (.openvino_env) $ pip install wheel setuptools
  - (.openvino_env) $ pip install -r requirements.txt
  - (.openvino_env) $ jupyter lab notebooks



Name	Last Modified
001-hello-...	8 minutes ago
002-openv...	8 minutes ago
003-hello-...	8 minutes ago
004-hello-...	8 minutes ago
101-tenso...	8 minutes ago
102-pytorc...	8 minutes ago
103-paddl...	8 minutes ago
104-model...	8 minutes ago
105-langu...	8 minutes ago
106-auto-...	8 minutes ago
107-speec...	8 minutes ago
108-gpu-d...	8 minutes ago
109-perfor...	8 minutes ago
110-ct-seg...	8 minutes ago
111-yolov...	8 minutes ago
112-pytorc...	8 minutes ago
113-image...	8 minutes ago
115-async-...	8 minutes ago
116-sparsi...	8 minutes ago
117-model...	8 minutes ago
118-optim...	8 minutes ago
119-tflite-...	8 minutes ago
120-tenso...	8 minutes ago
121-conve...	8 minutes ago

- Refer to the link
  https://docs.openvino.ai/2023.1/notebooks_installation.html
  https://github.com/openvinotoolkit/openvino_notebooks

Install the Python (another version)

- For example, we try to install the Python3.8 (default is Python3.10)
- Open the Terminator
- Input the command below,
  - $ sudo add-apt-repository ppa:deadsnakes/ppa
  - $ sudo apt update
  - $ sudo apt-cache policy python3. **Tab Tab!!**
  - $ sudo apt install python3.8 -y
  - $ sudo apt install python3.8-venv python3.8-dev python3.8-distutils -y
  - $ python3.8

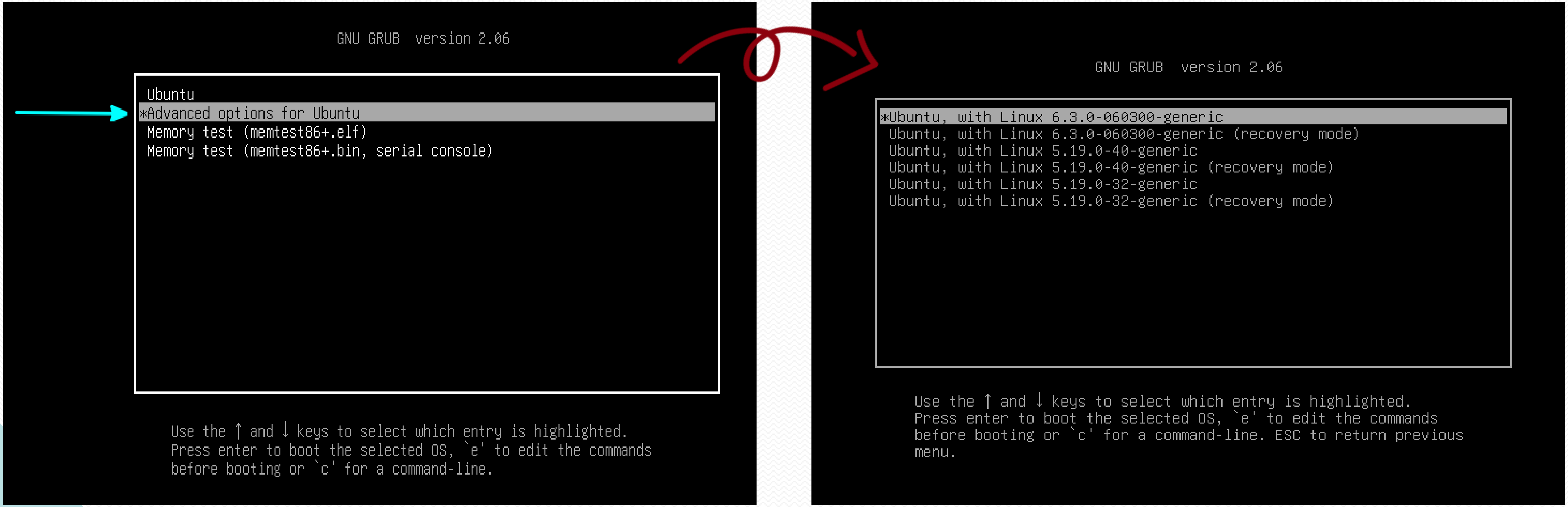
Kernel Version Change

- Open the Terminator
- Input the command below,

```
$ mkdir -p temp && cd temp
$ wget https://raw.githubusercontent.com/pimlie/ubuntu-mainline-kernel.sh/master/ubuntu-mainline-kernel.sh
$ chmod +x ubuntu-mainline-kernel.sh
$ sudo bash -E ubuntu-mainline-kernel.sh -r
$ sudo bash -E ubuntu-mainline-kernel.sh -i v5.19.0
$ sudo gedit /etc/default/grub
    #GRUB_TIMEOUT_STYLE=hidden
    GRUB_TIMEOUT=5
$ sudo update-grub
$ sudo reboot
```

Kernel Version Change (cont,)

- When the booting time, you can see the “**Grub**” and can select the Kernel version what is the boot



```
                    GNU GRUB  version 2.06

 Ubuntu
*Advanced options for Ubuntu
 Memory test (memtest86+.elf)
 Memory test (memtest86+.bin, serial console)

     Use the ↑ and ↓ keys to select which entry is highlighted.
     Press enter to boot the selected OS, `e' to edit the commands
     before booting or `c' for a command-line.
```

```
                    GNU GRUB  version 2.06

*Ubuntu, with Linux 6.3.0-060300-generic
 Ubuntu, with Linux 6.3.0-060300-generic (recovery mode)
 Ubuntu, with Linux 5.19.0-40-generic
 Ubuntu, with Linux 5.19.0-40-generic (recovery mode)
 Ubuntu, with Linux 5.19.0-32-generic
 Ubuntu, with Linux 5.19.0-32-generic (recovery mode)

     Use the ↑ and ↓ keys to select which entry is highlighted.
     Press enter to boot the selected OS, `e' to edit the commands
     before booting or `c' for a command-line. ESC to return previous
     menu.
```

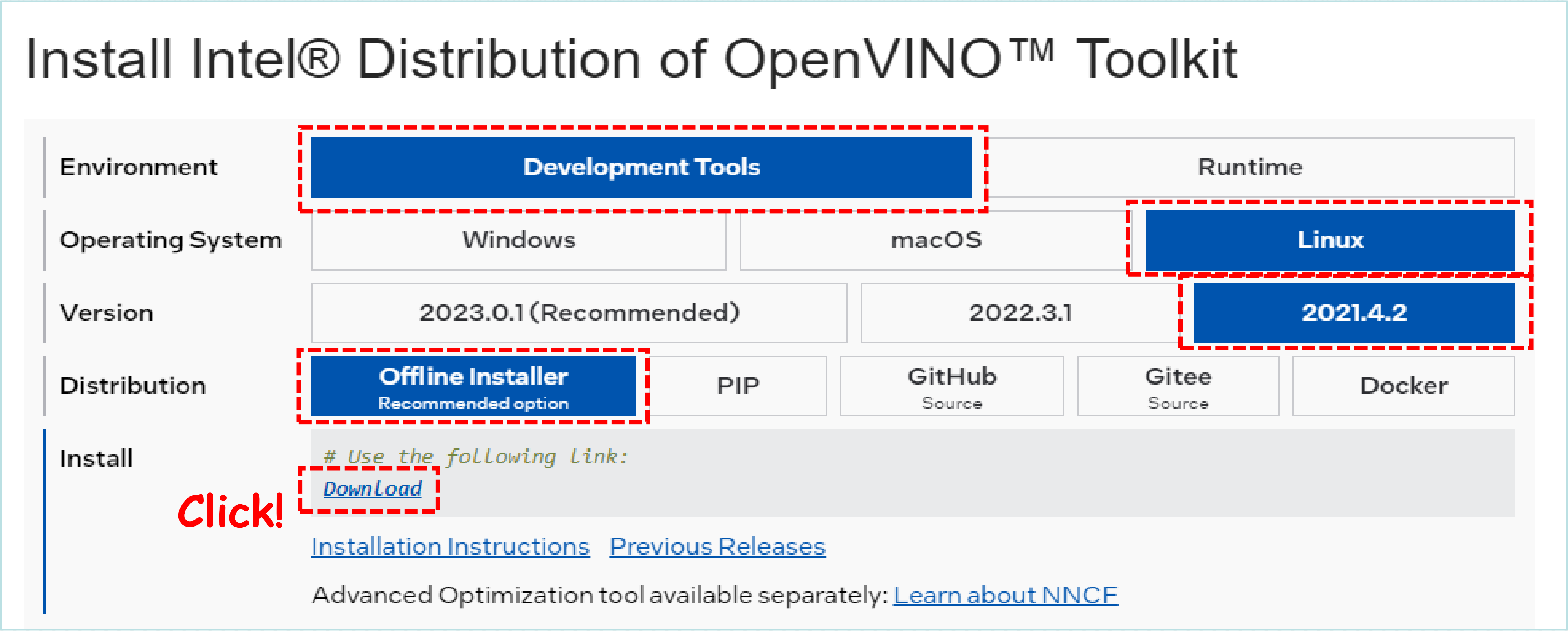
n ∈ N, A > 0, ⇒
lim_{n→∞} ⁿ√A = 1
n ≥ n₀ : (xₙ)
n ≥ n₀ : (xₙ - g) < ε
lokal. max;
N → R
∀x, x' ∈ X
lim min
lok. min
∀n ∈ N xₙ ≤ yₙ ≤ zₙ
{xₙ} : xₙ = 1/n;
{xₙ} + {yₙ} =df {xₙ + yₙ}; 13
{xₙ} · {yₙ} =df {xₙ · yₙ}; 13

THANK YOU

Backup

Install the OpenVINO

- Open the Google Chrome and search “openvino install”
- Download the openVINO (old version 2021)
  https://docs.openvino.ai/2023.0/openvino_docs_install_guides_overview.html?ENVIRONMENT=DEV_TOOLS&OP_SYSTEM=WINDOWS&VERSION=v_2021_4_2&DISTRIBUTION=OFFLINE_INSTALLER



Install Intel® Distribution of OpenVINO™ Toolkit

Environment	**Development Tools**	Runtime			
Operating System	Windows	macOS	**Linux**		
Version	2023.0.1 (Recommended)	2022.3.1	**2021.4.2**		
Distribution	**Offline Installer** Recommended option	PIP	GitHub Source	Gitee Source	Docker

Install

```
# Use the following link:
Download
```

Click!

Installation Instructions Previous Releases

Advanced Optimization tool available separately: Learn about NNCF

Install the OpenVINO (cont,)

- Extract the zip file

```
$ cd Downloads
$ unzip l_openvino_toolkit_p_2021.4.752.zip
```

- Revise the silent.cfg file

```
$ cd l_openvino_toolkit_p_2021.4.752
$ sed -i ‘s/decline/accept/g’ silent.cfg
```

- Install the openVINO

```
$ sudo ./install.sh -s silent.cfg
```

- Install the Packages

```
$ sudo -E ./install_openvino_dependencies.sh
```

- Check the installed openVINO

```
$  cd /opt/intel/openvino_2021
```

- Start the openVINO environment

```
$ source bin/setupvars.sh
```

Kernel Change

- Open the Terminator
- Input the command below,

  ```
  $ sudo add-apt-repository ppa:cappelikan/ppa -y
  $ sudo apt update
  $ sudo apt install mainline -y
  ```

- Execute the “mainline”