

# ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

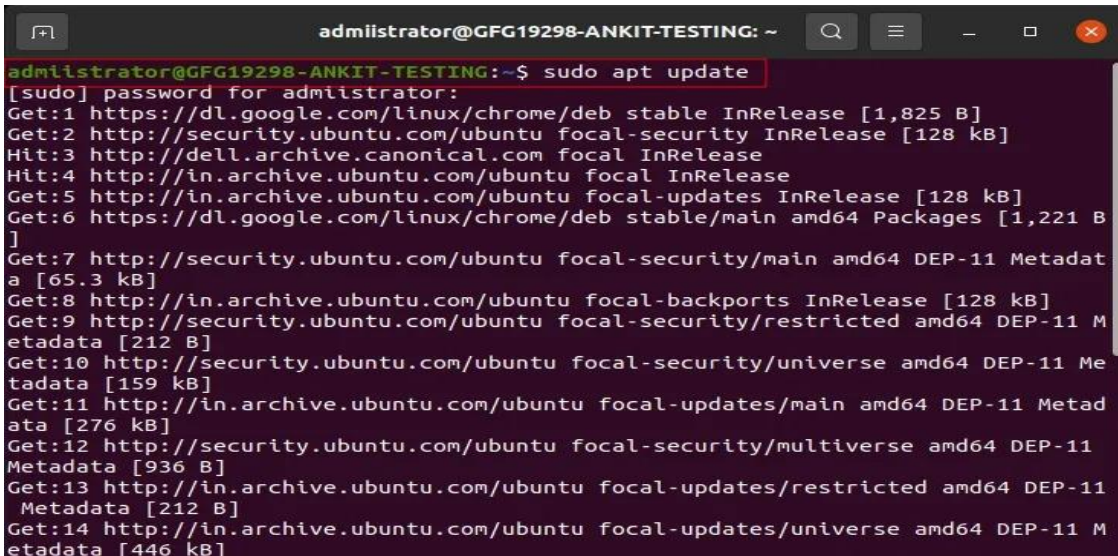
DAY – 6

Date: June 30, 2025

## INSTALLING PYTHON

Step 1: First Update the List of Available Packages

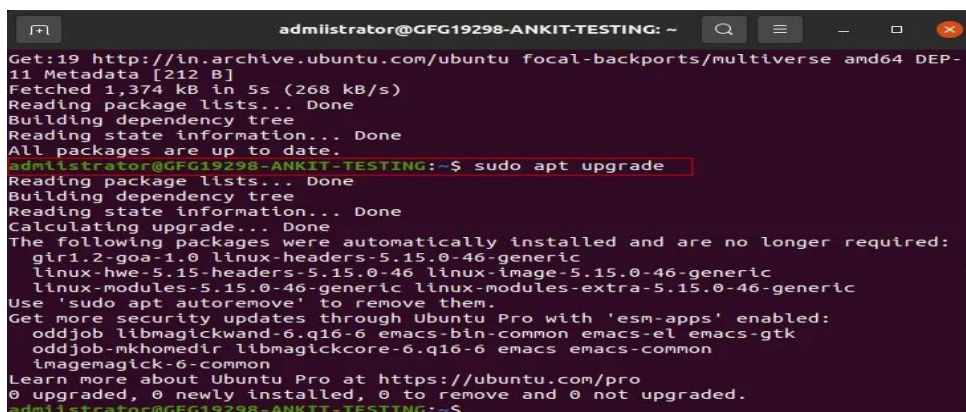
**Command:** sudo apt update



```
adminiistrator@GFG19298-ANKIT-TESTING: ~  
adminiistrator@GFG19298-ANKIT-TESTING:~$ sudo apt update  
[sudo] password for adminiistrator:  
Get:1 https://dl.google.com/linux/chrome/deb stable InRelease [1,825 B]  
Get:2 http://security.ubuntu.com/ubuntu focal-security InRelease [128 kB]  
Hit:3 http://dell.archive.canonical.com focal InRelease  
Hit:4 http://in.archive.ubuntu.com/ubuntu focal InRelease  
Get:5 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]  
Get:6 https://dl.google.com/linux/chrome/deb stable/main amd64 Packages [1,221 B]  
Get:7 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadat  
a [65.3 kB]  
Get:8 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [128 kB]  
Get:9 http://security.ubuntu.com/ubuntu focal-security/restricted amd64 DEP-11 M  
etadata [212 B]  
Get:10 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Me  
tadata [159 kB]  
Get:11 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metad  
ata [276 kB]  
Get:12 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 DEP-11  
Metadata [936 B]  
Get:13 http://in.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 DEP-11  
Metadata [212 B]  
Get:14 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 M  
etadata [446 kB]
```

Step 2 Update the Available Package

**Command:** sudo apt upgrade



```
adminiistrator@GFG19298-ANKIT-TESTING: ~  
Get:19 http://in.archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 DEP-  
11 Metadata [212 B]  
Fetched 1,374 kB in 5s (268 kB/s)  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
All packages are up to date.  
adminiistrator@GFG19298-ANKIT-TESTING:~$ sudo apt upgrade  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
Calculating upgrade... Done  
The following packages were automatically installed and are no longer required:  
  gir1.2-goa-1.0 linux-headers-5.15.0-46-generic  
  linux-hwe-5.15-headers-5.15.0-46 linux-image-5.15.0-46-generic  
  linux-modules-5.15.0-46-generic linux-modules-extra-5.15.0-46-generic  
Use 'sudo apt autoremove' to remove them.  
Get more security updates through Ubuntu Pro with 'esm-apps' enabled:  
  oddjob libmagickwand-6.q16-6 emacs-bin-common emacs-el emacs-gtk  
  oddjob-mkhomedir libmagickcore-6.q16-6 emacs emacs-common  
  imagemagick-6-common  
Learn more about Ubuntu Pro at https://ubuntu.com/pro  
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.  
adminiistrator@GFG19298-ANKIT-TESTING:~$
```

**Command:** sudo apt install python[version number]

```
ck@ch: $ sudo apt install python3.11
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  libpython3.11-minimal libpython3.11-stdlib python3
Suggested packages:
  python3.11-venv binfmt-support
The following NEW packages will be installed:
  libpython3.11-minimal libpython3.11-stdlib python3
```

## Install PIP for Python 3 Version on Ubuntu

**Step 1:** Check if Python is installed on your device or not. open Terminal with "CTRL+ALT+T" and run the command.If Python in already installed, go to step 2, then install Python first.

**Command:** python3 --version

```
gfg0407-kapil@kapil:~$ python3 --version
Python 3.10.12
gfg0407-kapil@kapil:~$
```

**Step 2:** After that, the following main Linux Commands will be used to directly Install the PIP3 on Ubuntu.

**Command:** sudo apt install python3-pip

```
ubuntu@ubun:~$ sudo apt install python3-pip
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  dh-python libexpat1-dev libpython3-dev libpython3.6-dev
  python-pip-whl python3-dev python3-setuptools python3-wheel
  python3.6-dev
Suggested packages:
  python-setuptools-doc
```

**Step 3:** Now, it is time to verify the installation. For that purpose, the following command will be executed on Linux Terminal.

**Command:** pip3 --version

```
ubuntu@ubun:~$ pip3 --version
pip 9.0.1 from /usr/lib/python3/dist-packages (python 3.6)
```

## Jupyter Notebook

Jupyter Notebook is a web-based interactive computational environment for creating Jupyter notebook documents. It supports multiple programming languages, including Python, Julia, and R, through the use of different kernels. Jupyter Notebook provides a simple and straightforward interface with a linear flow, where you can create and run cells within a single notebook1.

- To install Jupyter Notebook, you can use the following command:

**Command:** pip install notebook

- To run Jupyter Notebook, use:

**Command:** jupyter notebook

## Scikit-learn

Scikit-learn (also known as sklearn) is a widely-used open-source Python library for machine learning. It builds on other scientific libraries like NumPy, SciPy and Matplotlib to provide efficient tools for predictive data analysis and data mining.

### Installing Scikit-Learn in a Ubuntu system

**Command:** pip3 install scikit-learn --user

```
h2s@Ubuntu22:~$ pip install scikit-learn --user
Collecting scikit-learn
  Downloading scikit_learn-1.3.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (10.8 MB)
    10.8/10.8 MB 1.8 MB/s eta 0:00:00
Requirement already satisfied: numpy>=1.17.3 in ./local/lib/python3.10/site-packages (from scikit-learn) (1.24.3)
Collecting scipy>=1.5.0 (from scikit-learn)
  Downloading scipy-1.11.1-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (36.3 MB)
    36.3/36.3 MB 1.6 MB/s eta 0:00:00
Collecting joblib>=1.1.1 (from scikit-learn)
  Downloading joblib-1.3.1-py3-none-any.whl (301 kB)
    302.0/302.0 kB 5.0 MB/s eta 0:00:00
Collecting threadpoolctl>=2.0.0 (from scikit-learn)
  Downloading threadpoolctl-3.2.0-py3-none-any.whl (15 kB)
Installing collected packages: threadpoolctl, scipy, joblib, scikit-learn
Successfully installed joblib-1.3.1 scikit-learn-1.3.0 scipy-1.11.1 threadpoolctl-3.2.0
```

Run this code in jupyter notebook

```
[1]: from sklearn import datasets
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier

X, y = datasets.load_iris(return_X_y=True)
X_train, X_test, y_train, y_test = train_test_split(X, y, random_state=42)

clf = RandomForestClassifier()
clf.fit(X_train, y_train)

print("Accuracy:", clf.score(X_test, y_test))

Accuracy: 1.0
```

[ ]: