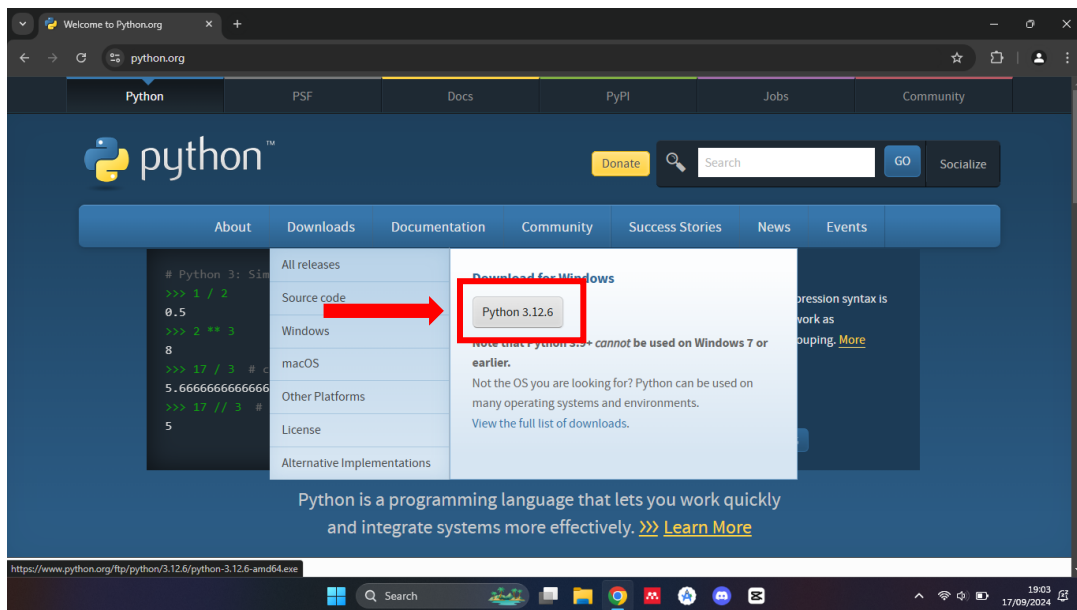
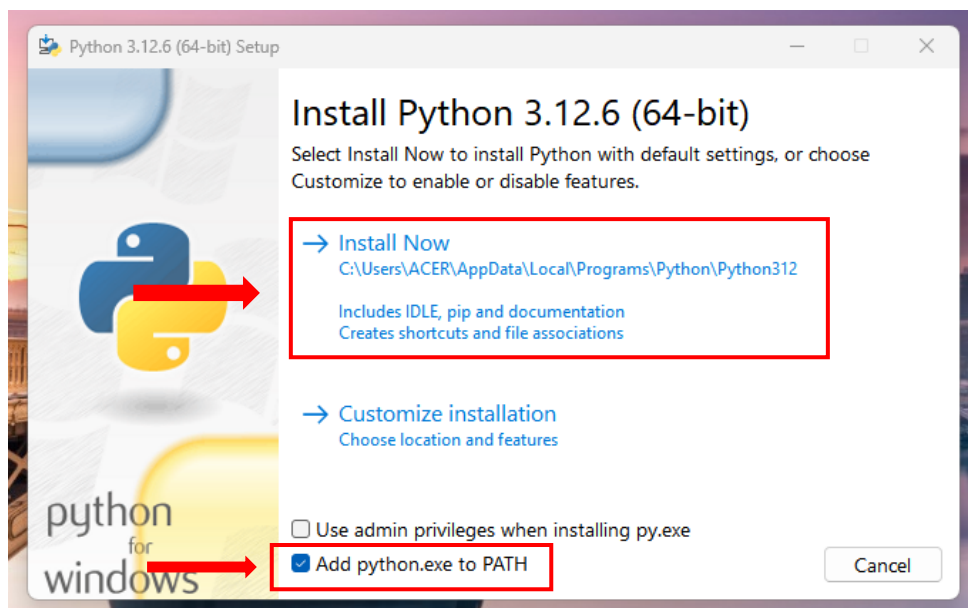


## Tahapan Instalasi python

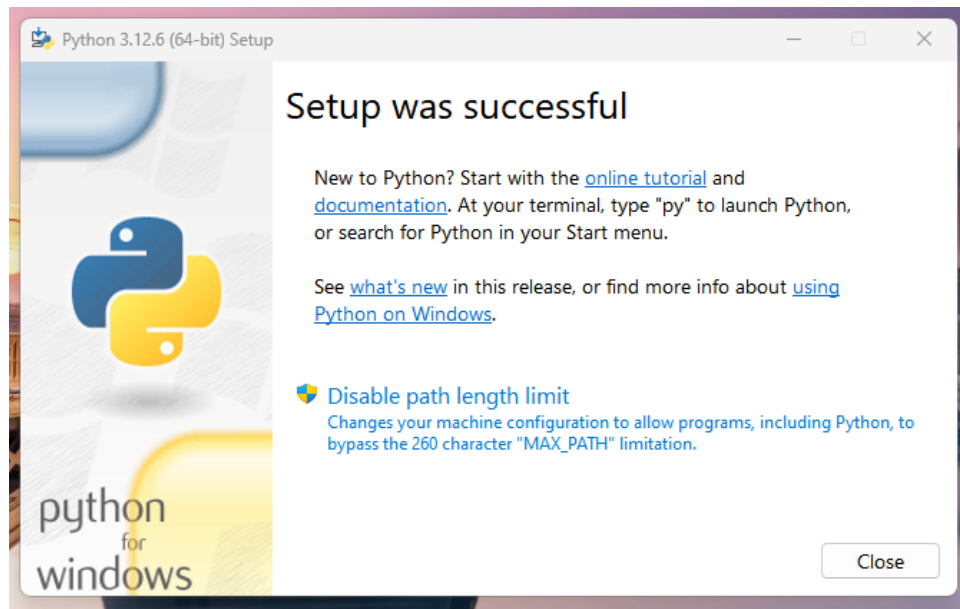
1. Buka website <https://www.python.org/> arahkan kursor ke menu Downloads dan klik download python 3.12.6



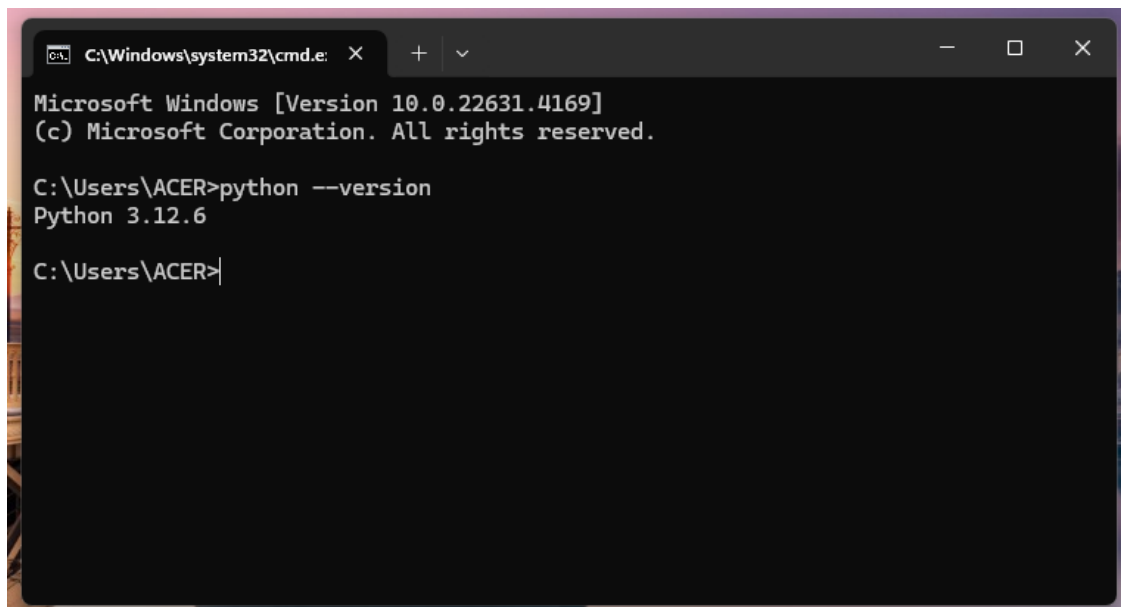
2. Setelah download selesai, buka file python-3.12.6-amd64\_2.exe dan ceklist “Add pthon.exe to PATH” lalu klik Install now. Ikuti proses setup sampai proses instalasi selesai



3. Apabila proses instalasi selesai, maka akan muncul tampilan sebagai berikut. Dan klik **Close**.

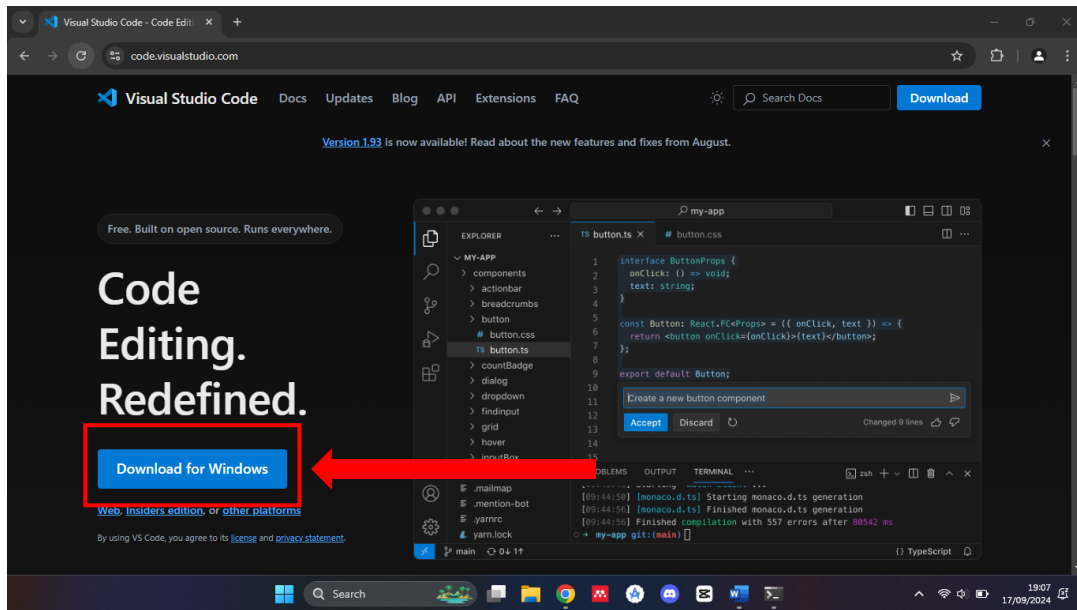


4. Untuk memastikan python sudah berhasil terinstal, buka command prompt dengan cara tekan tombol windows+R lalu ketik **CMD**.
5. Setelah muncul tampilan command prompt, masukan perintah : **python --version**. Apabila muncul keterangan versi python berarti kita sudah berhasil proses instalasinya.

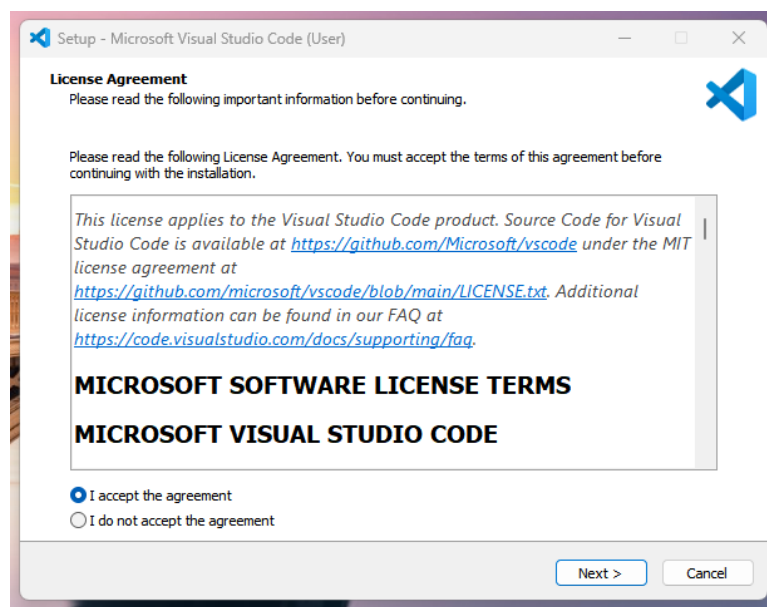


## Tahapan Konfigurasi python-VScode

1. Buka website <https://code.visualstudio.com/> lalu klik tombol download for windows

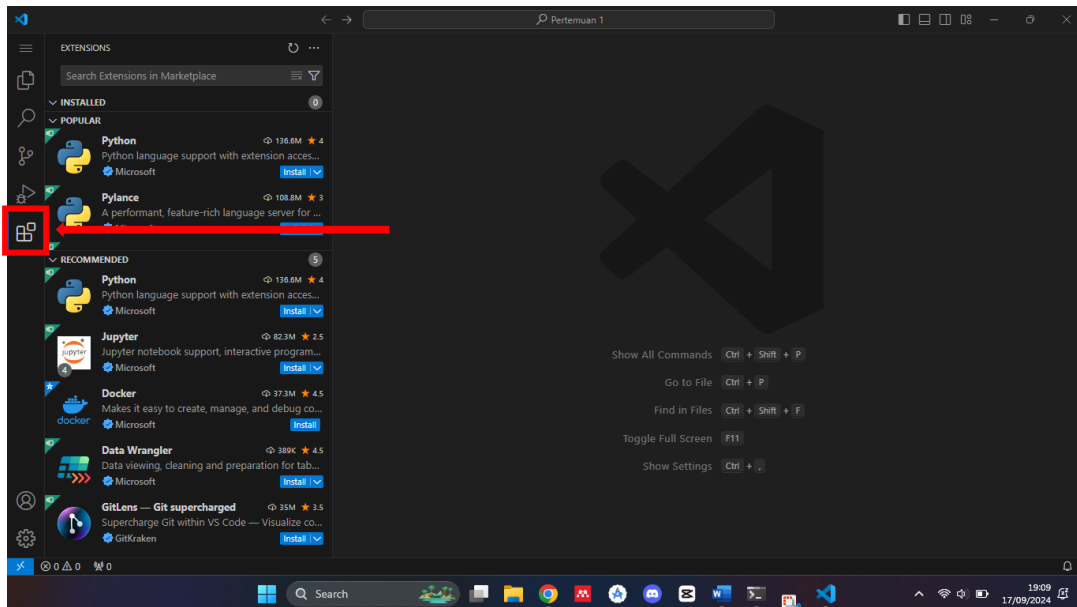


2. Setelah berhasil download, tahap berikutnya klik file VSCodeUserSetup-x64-1.93.1.exe untuk melakukan instalasi.

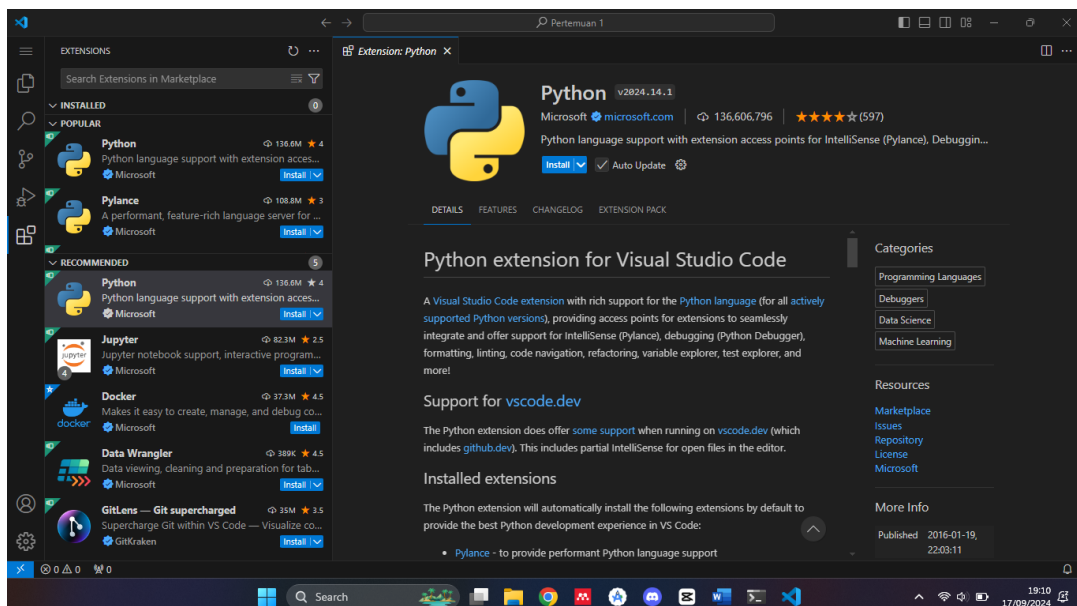


3. Ikuti semua tahapan instalasi sampai aplikasi Vscode berhasil terpasang di windows.

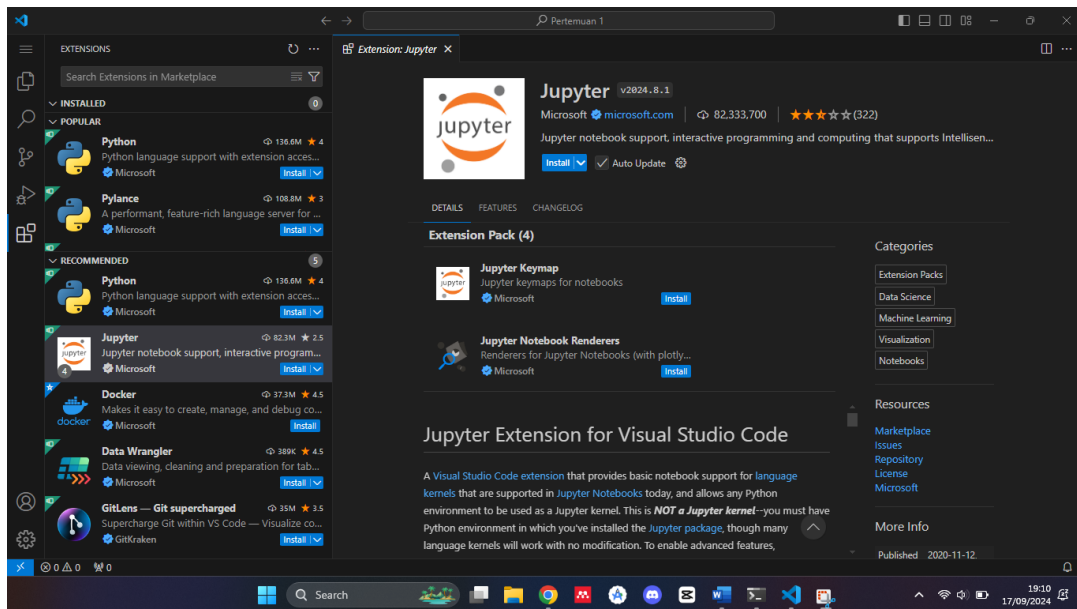
4. Setelah aplikasi Vscode berhasil terpasang, langkah berikutnya adalah install extensions untuk mengerjakan python programming. Klik icon extensions pada bagian kiri.



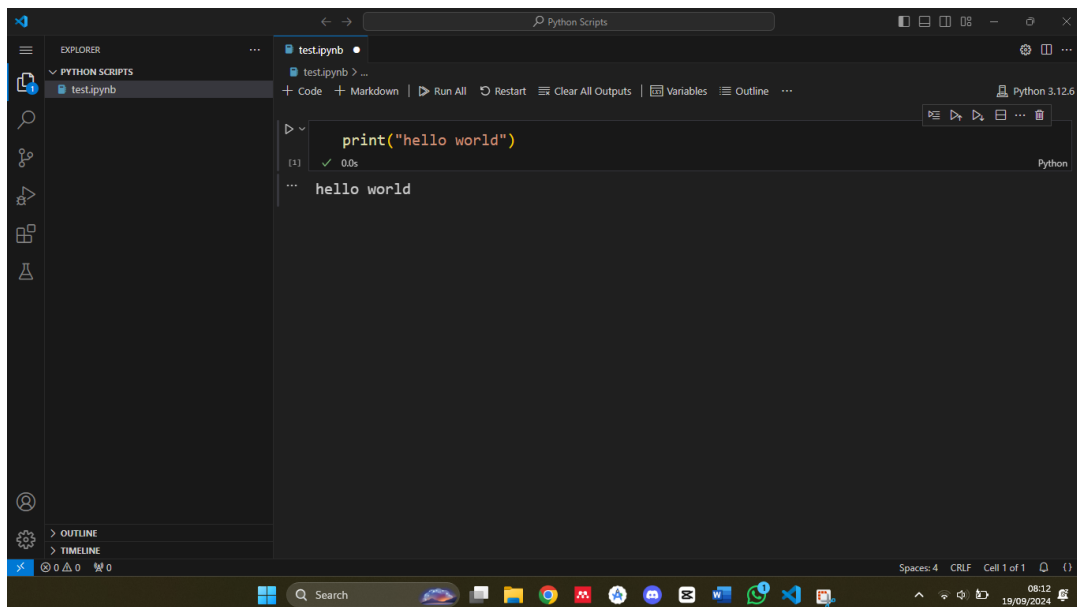
5. Pertama instal extensions **python** pada VScode



6. Selanjutnya install extensions **Jupyter** pada VScode



7. Setelah berhasil install extensions python dan jupyter, langkah berikutnya kita coba buat file dengan nama **test.ipynb**, dan ketikkan perintah **print("hello world")**. Apabila berhasil akan muncul tampilan seperti berikut :



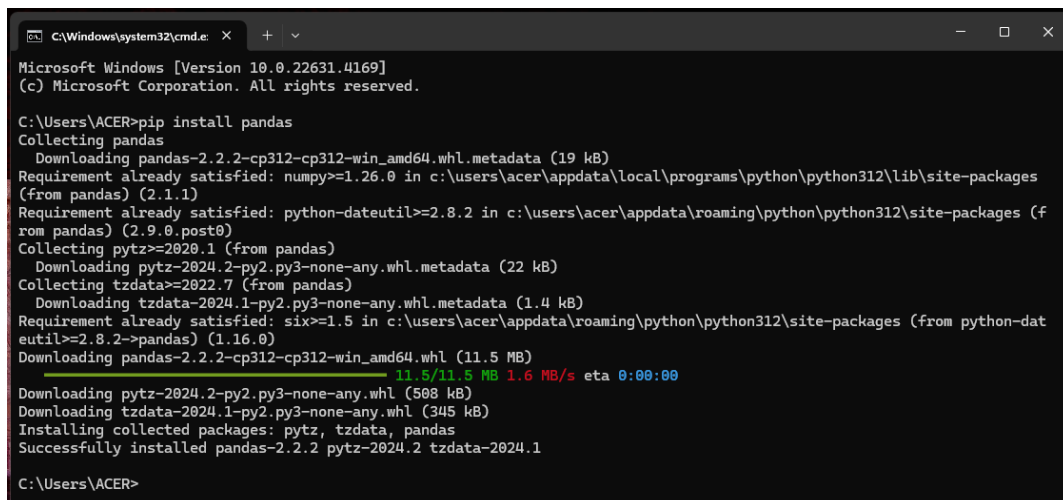
8. Sampai tahap ini kita sudah berhasil melakukan instalasi bahasa pemrograman python dan konfigurasi dengan Vscode.

## Tahapan instalasi Library untuk Machine Learning

Dalam pembuatan model machine learning, kita butuh library yang berperan untuk memudahkan kita dalam proses analisis data, pembuatan model sampai evaluasi model. Ada beberapa library yang kita butuhkan yaitu :

- Pandas
- Numpy
- Scikit-Learn
- Matplotlib
- Seaborn
- Mlxtend
- Streamlit

Untuk menginstall library Pandas, **pastikan PC/Laptop terhubung ke internet** dan buka command prompt lalu masukan perintah **“pip install pandas”**. Tunggu proses download dan instalasinya, apabila berhasil akan muncul tampilan sebagai berikut.

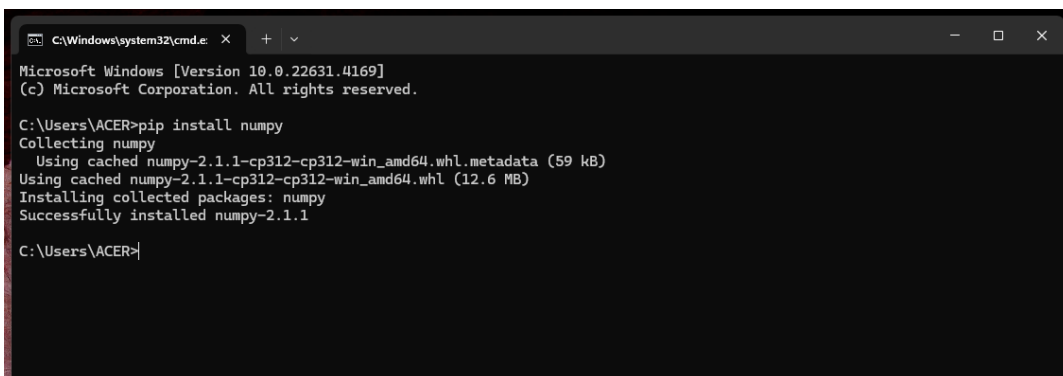


```
C:\Windows\system32\cmd.e  X  +  v  -  □  X
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ACER>pip install pandas
Collecting pandas
  Downloading pandas-2.2.2-cp312-cp312-win_amd64.whl.metadata (19 kB)
Requirement already satisfied: numpy>=1.26.0 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from pandas) (2.1.1)
Requirement already satisfied: python-dateutil>=2.8.2 in c:\users\acer\appdata\roaming\python\python312\site-packages (from pandas) (2.9.0.post0)
Collecting pytz>=2020.1 (from pandas)
  Downloading pytz-2024.2-py2.py3-none-any.whl.metadata (22 kB)
Collecting tzdata>=2022.7 (from pandas)
  Downloading tzdata-2024.1-py2.py3-none-any.whl.metadata (1.4 kB)
Requirement already satisfied: six>=1.5 in c:\users\acer\appdata\roaming\python\python312\site-packages (from python-dateutil>=2.8.2->pandas) (1.16.0)
Downloading pandas-2.2.2-cp312-cp312-win_amd64.whl (11.5 MB)
11.5/11.5 MB 1.6 MB/s eta 0:00:00
Downloading pytz-2024.2-py2.py3-none-any.whl (508 kB)
Downloading tzdata-2024.1-py2.py3-none-any.whl (345 kB)
Installing collected packages: pytz, tzdata, pandas
Successfully installed pandas-2.2.2 pytz-2024.2 tzdata-2024.1

C:\Users\ACER>
```

Langkah berikutnya install library numpy dengan memasukan perintah **“pip install numpy”** pada command prompt. Tunggu proses download dan instalasinya, apabila berhasil akan muncul tampilan sebagai berikut.



```
C:\Windows\system32\cmd.e  X  +  v  -  □  X
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ACER>pip install numpy
Collecting numpy
  Using cached numpy-2.1.1-cp312-cp312-win_amd64.whl.metadata (59 kB)
Using cached numpy-2.1.1-cp312-cp312-win_amd64.whl (12.6 MB)
Installing collected packages: numpy
Successfully installed numpy-2.1.1

C:\Users\ACER>
```

Selanjutnya kita instal library scikit-learn dengan memasukkan perintah **“pip install scikit-learn”** pada command prompt. Tunggu proses download dan instalasinya, apabila berhasil akan muncul tampilan sebagai berikut.

```
C:\Windows\system32\cmd.e: X + v
C:\Users\ACER>pip install scikit-learn
Collecting scikit-learn
  Downloading scikit_learn-1.5.2-cp312-cp312-win_amd64.whl.metadata (13 kB)
Requirement already satisfied: numpy>=1.19.5 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from scikit-learn) (2.1.1)
Collecting scipy>=1.6.0 (from scikit-learn)
  Downloading scipy-1.14.1-cp312-cp312-win_amd64.whl.metadata (60 kB)
Collecting joblib>=1.2.0 (from scikit-learn)
  Downloading joblib-1.4.2-py3-none-any.whl.metadata (5.4 kB)
Collecting threadpoolctl>=3.1.0 (from scikit-learn)
  Downloading threadpoolctl-3.5.0-py3-none-any.whl.metadata (13 kB)
Download scikit_learn-1.5.2-cp312-cp312-win_amd64.whl (11.0 MB)
11.0/11.0 MB 671.5 kB/s eta 0:00:00
Download joblib-1.4.2-py3-none-any.whl (301 kB)
Download scipy-1.14.1-cp312-cp312-win_amd64.whl (44.5 MB)
44.5/44.5 MB 603.8 kB/s eta 0:00:00
Download threadpoolctl-3.5.0-py3-none-any.whl (18 kB)
Installing collected packages: threadpoolctl, scipy, joblib, scikit-learn
Successfully installed joblib-1.4.2 scikit-learn-1.5.2 scipy-1.14.1 threadpoolctl-3.5.0
C:\Users\ACER>
```

Berikutnya kita install library Matplotlib dengan memasukkan perintah **“pip install matplotlib”** pada command prompt. Tunggu proses download dan instalasinya, apabila berhasil akan muncul tampilan sebagai berikut.

```
C:\Windows\system32\cmd.e: X + v
C:\Users\ACER>pip install matplotlib
Collecting matplotlib
  Downloading matplotlib-3.9.2-cp312-cp312-win_amd64.whl.metadata (11 kB)
Collecting contourpy>=1.0.1 (from matplotlib)
  Downloading contourpy-1.3.0-cp312-cp312-win_amd64.whl.metadata (5.4 kB)
Collecting cycler>=0.10 (from matplotlib)
  Downloading cycler-0.12.1-py3-none-any.whl.metadata (3.8 kB)
Collecting fonttools>=4.22.0 (from matplotlib)
  Downloading fonttools-4.53.1-cp312-cp312-win_amd64.whl.metadata (165 kB)
Collecting kiwisolver>=1.3.1 (from matplotlib)
  Downloading kiwisolver-1.4.7-cp312-cp312-win_amd64.whl.metadata (6.4 kB)
Requirement already satisfied: numpy>=1.23 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib) (2.1.1)
Requirement already satisfied: packaging>=20.0 in c:\users\acer\appdata\roaming\python\python312\site-packages (from matplotlib) (24.1)
Collecting pillow>=8 (from matplotlib)
  Downloading pillow-10.4.0-cp312-cp312-win_amd64.whl.metadata (9.3 kB)
Collecting pyparsing>=2.3.1 (from matplotlib)
  Downloading pyparsing-3.1.4-py3-none-any.whl.metadata (5.1 kB)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\acer\appdata\roaming\python\python312\site-packages (from matplotlib) (2.9.0.post0)
Requirement already satisfied: six>=1.5 in c:\users\acer\appdata\roaming\python\python312\site-packages (from python-dateutil>=2.7->matplotlib) (1.16.0)
Download matplotlib-3.9.2-cp312-cp312-win_amd64.whl (7.8 MB)
7.8/7.8 MB 1.1 MB/s eta 0:00:00
Download contourpy-1.3.0-cp312-cp312-win_amd64.whl (218 kB)
Download cycler-0.12.1-py3-none-any.whl (8.3 kB)
Download fonttools-4.53.1-cp312-cp312-win_amd64.whl (2.2 MB)
2.2/2.2 MB 561.7 kB/s eta 0:00:00
Download kiwisolver-1.4.7-cp312-cp312-win_amd64.whl (55 kB)
Download pillow-10.4.0-cp312-cp312-win_amd64.whl (2.6 MB)
```



Selanjutnya kita instal library seaborn dengan memasukan perintah “**pip install seaborn**” pada command prompt. Tunggu proses download dan instalasinya, apabila berhasil akan muncul tampilan sebagai berikut.

```
C:\Windows\system32\cmd.exe: X + v
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ACER>pip install seaborn
Collecting seaborn
  Downloading seaborn-0.13.2-py3-none-any.whl.metadata (5.4 kB)
Requirement already satisfied: numpy!=1.24.0,>=1.20 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from seaborn) (2.1.1)
Requirement already satisfied: pandas>=1.2 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from seaborn) (2.2.2)
Requirement already satisfied: matplotlib!=3.6.1,>=3.4 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from seaborn) (3.9.2)
Requirement already satisfied: contourpy>=1.0.1 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (1.3.0)
Requirement already satisfied: cycler>=0.10 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (4.53.1)
Requirement already satisfied: kiwisolver>=1.3.1 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (1.4.7)
Requirement already satisfied: packaging>=20.0 in c:\users\acer\appdata\roaming\python\python312\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (24.1)
Requirement already satisfied: pillow>=8 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (10.4.0)
Requirement already satisfied: pyparsing>=2.3.1 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (3.1.4)
Requirement already satisfied: python-dateutil>=2.7 in c:\users\acer\appdata\roaming\python\python312\site-packages (from matplotlib!=3.6.1,>=3.4->seaborn) (2.9.0.post0)
Requirement already satisfied: pytz>=2020.1 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from pandas>=1.2->seaborn) (2024.2)
```

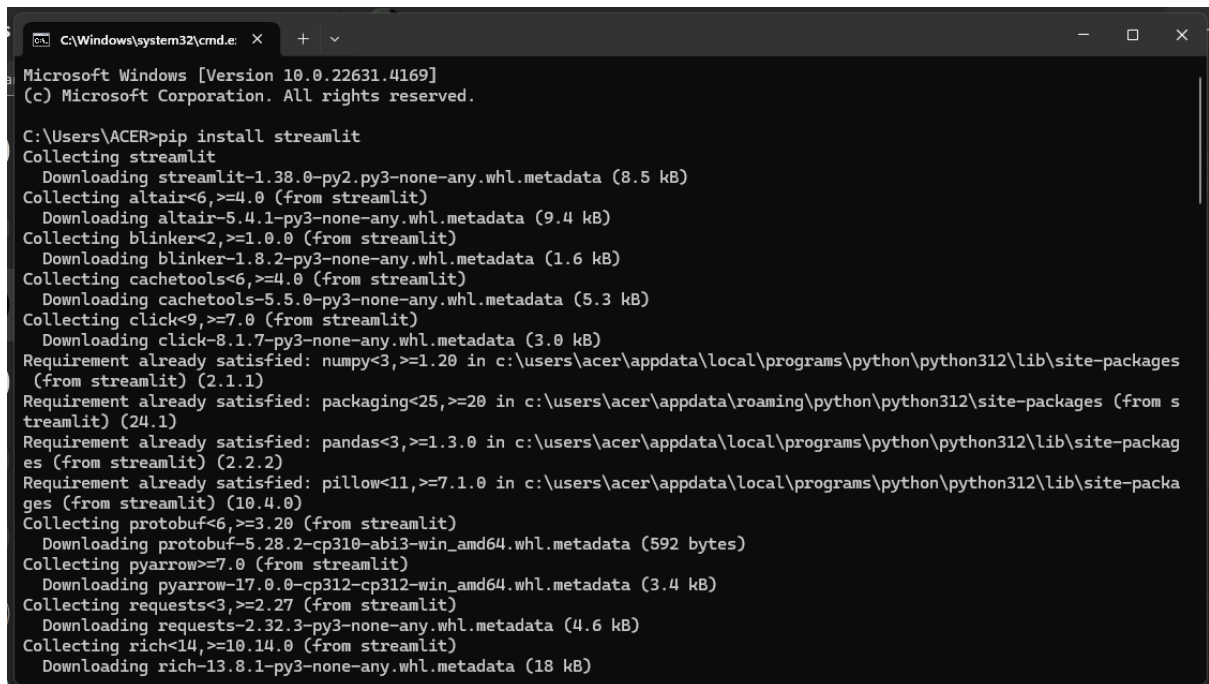
Berikutnya kita install library mlxtend dengan memasukan perintah “**pip install mlxtend**” pada command prompt. Tunggu proses download dan instalasinya, apabila berhasil akan muncul tampilan sebagai berikut.

```
C:\Windows\system32\cmd.exe: X + v
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ACER>pip install mlxtend
Collecting mlxtend
  Downloading mlxtend-0.23.1-py3-none-any.whl.metadata (7.3 kB)
Requirement already satisfied: scipy>=1.2.1 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from mlxtend) (1.14.1)
Requirement already satisfied: numpy>=1.16.2 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from mlxtend) (2.1.1)
Requirement already satisfied: pandas>=0.24.2 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from mlxtend) (2.2.2)
Requirement already satisfied: scikit-learn>=1.0.2 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from mlxtend) (1.5.2)
Requirement already satisfied: matplotlib>=3.0.0 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from mlxtend) (3.9.2)
Requirement already satisfied: joblib>=0.13.2 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from mlxtend) (1.4.2)
Requirement already satisfied: contourpy>=1.0.1 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib>=3.0.0->mlxtend) (1.3.0)
Requirement already satisfied: cycler>=0.10 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib>=3.0.0->mlxtend) (0.12.1)
Requirement already satisfied: fonttools>=4.22.0 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib>=3.0.0->mlxtend) (4.53.1)
Requirement already satisfied: kiwisolver>=1.3.1 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib>=3.0.0->mlxtend) (1.4.7)
Requirement already satisfied: packaging>=20.0 in c:\users\acer\appdata\roaming\python\python312\site-packages (from matplotlib>=3.0.0->mlxtend) (24.1)
Requirement already satisfied: pillow>=8 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from matplotlib>=3.0.0->mlxtend) (10.4.0)
```



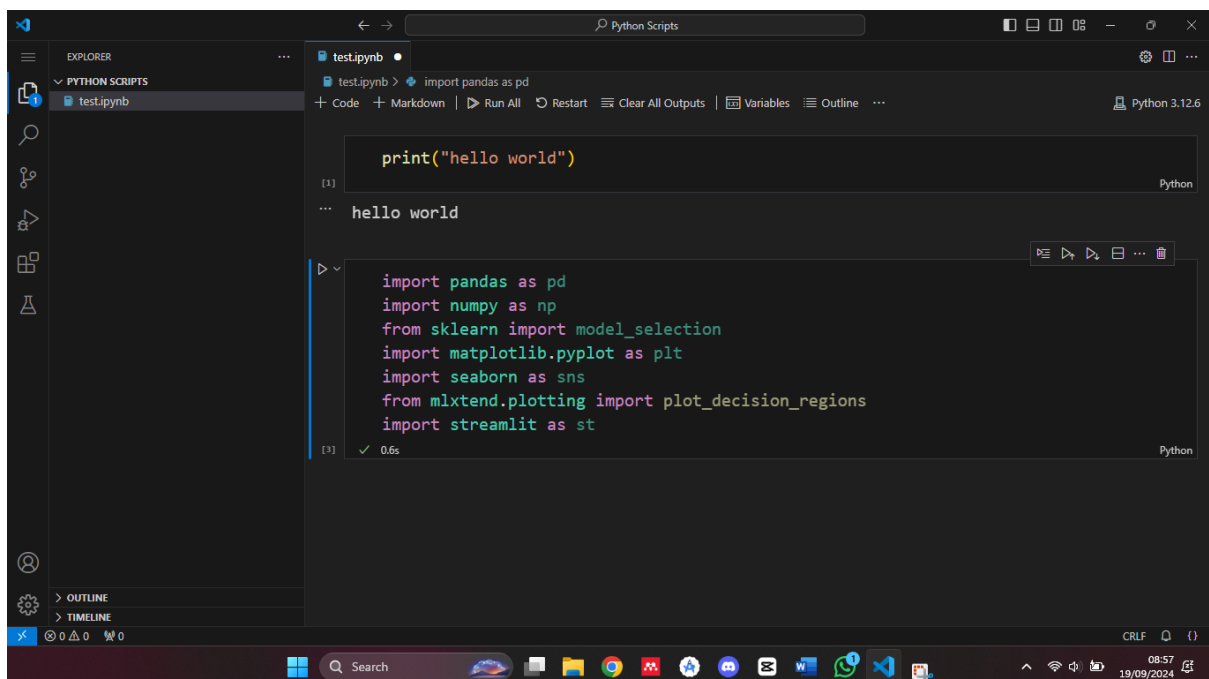
Berikutnya kita install library streamlit dengan memasukkan perintah “**pip install streamlit**” pada command prompt. Tunggu proses download dan instalasinya, apabila berhasil akan muncul tampilan sebagai berikut.



```
C:\Windows\system32\cmd.e: X + v
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Users\ACER>pip install streamlit
Collecting streamlit
  Downloading streamlit-1.38.0-py2.py3-none-any.whl.metadata (8.5 kB)
Collecting altair<6,>=4.0 (from streamlit)
  Downloading altair-5.4.1-py3-none-any.whl.metadata (9.4 kB)
Collecting blinker<2,>=1.0.0 (from streamlit)
  Downloading blinker-1.8.2-py3-none-any.whl.metadata (1.6 kB)
Collecting cachetools<6,>=4.0 (from streamlit)
  Downloading cachetools-5.5.0-py3-none-any.whl.metadata (5.3 kB)
Collecting click<9,>=7.0 (from streamlit)
  Downloading click-8.1.7-py3-none-any.whl.metadata (3.0 kB)
Requirement already satisfied: numpy<3,>=1.20 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from streamlit) (2.1.1)
Requirement already satisfied: packaging<25,>=20 in c:\users\acer\appdata\roaming\python\python312\site-packages (from streamlit) (24.1)
Requirement already satisfied: pandas<3,>=1.3.0 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from streamlit) (2.2.2)
Requirement already satisfied: pillow<11,>=7.1.0 in c:\users\acer\appdata\local\programs\python\python312\lib\site-packages (from streamlit) (10.4.0)
Collecting protobuf<6,>=3.20 (from streamlit)
  Downloading protobuf-5.28.2-cp310-abi3-win_amd64.whl.metadata (592 bytes)
Collecting pyarrow>=7.0 (from streamlit)
  Downloading pyarrow-17.0.0-cp312-cp312-win_amd64.whl.metadata (3.4 kB)
Collecting requests<3,>=2.27 (from streamlit)
  Downloading requests-2.32.3-py3-none-any.whl.metadata (4.6 kB)
Collecting rich<14,>=10.14.0 (from streamlit)
  Downloading rich-13.8.1-py3-none-any.whl.metadata (18 kB)
```

Apabila semua library yang dibutuhkan sudah berhasil terinstall, coba kita cek dengan memanggil library pada file test.ipynb dengan memasuka perintah sebagai berikut :



```
test.ipynb
test.ipynb > import pandas as pd
+ Code + Markdown | Run All | Restart | Clear All Outputs | Variables | Outline ...
Python 3.12.6

print("hello world")

[1]
...
hello world

import pandas as pd
import numpy as np
from sklearn import model_selection
import matplotlib.pyplot as plt
import seaborn as sns
from mlxtend.plotting import plot_decision_regions
import streamlit as st

[3] ✓ 0.6s
Python
```

Apabila muncul ceklist hijau dan tidak ada pesan error berarti proses instalasi library sudah berhasil.