LAB MANUAL

Create Virtual Environment

Lab Assignment: Creating and Using a Virtual Environment for a Python Project in Jupyter Notebook

Objective

In this lab assignment, you will learn how to create a virtual environment for a Python project, manage its dependencies using `requirements.txt`, and run the project in Jupyter Notebook. **This ensures that the project-specific libraries do not interfere with the global Python environment.**

Prerequisites

- Basic understanding of Python programming
- Anaconda or Python installed on your system.
- Basic knowledge of command-line operations

Project Overview

You will create a simple Python project for displaying live news, that uses the following libraries:

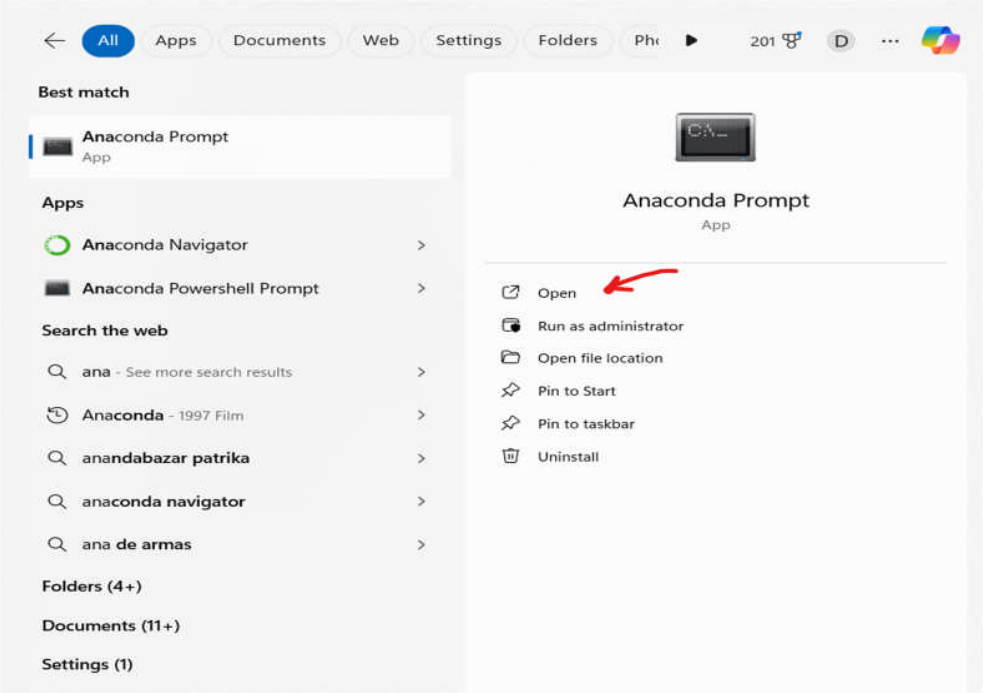
- `requests` for making HTTP requests
- `beautifulsoup4` for parsing HTML

You will create a Jupyter Notebook that fetches weather data from a public API, parses the data, and plots the temperature trend over a week.

Solution

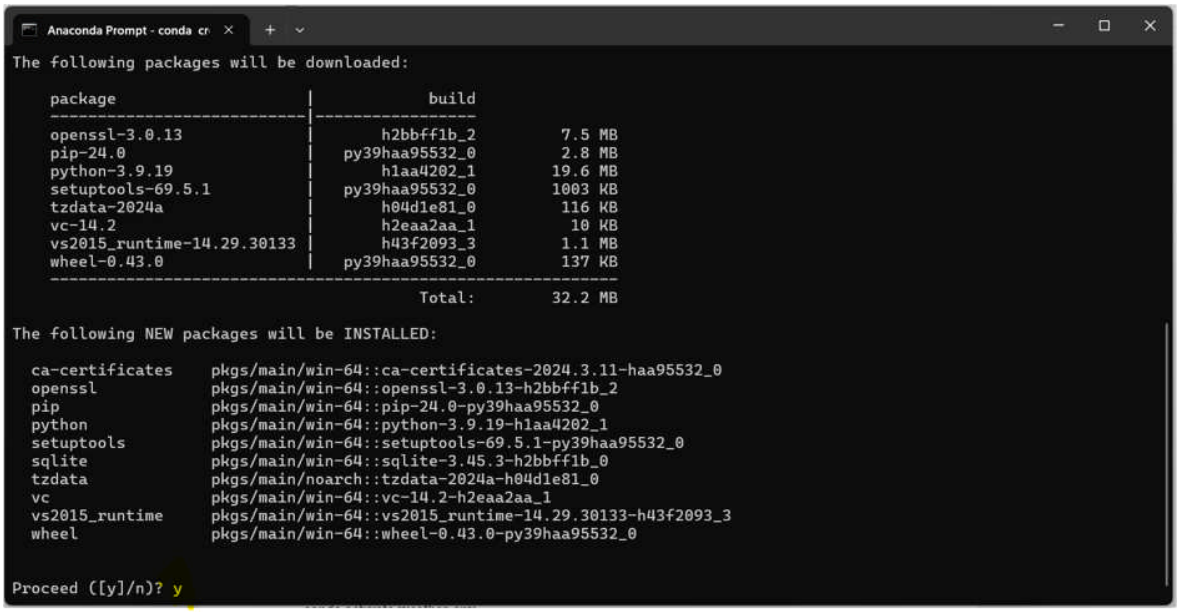
Step-by-Step Instructions

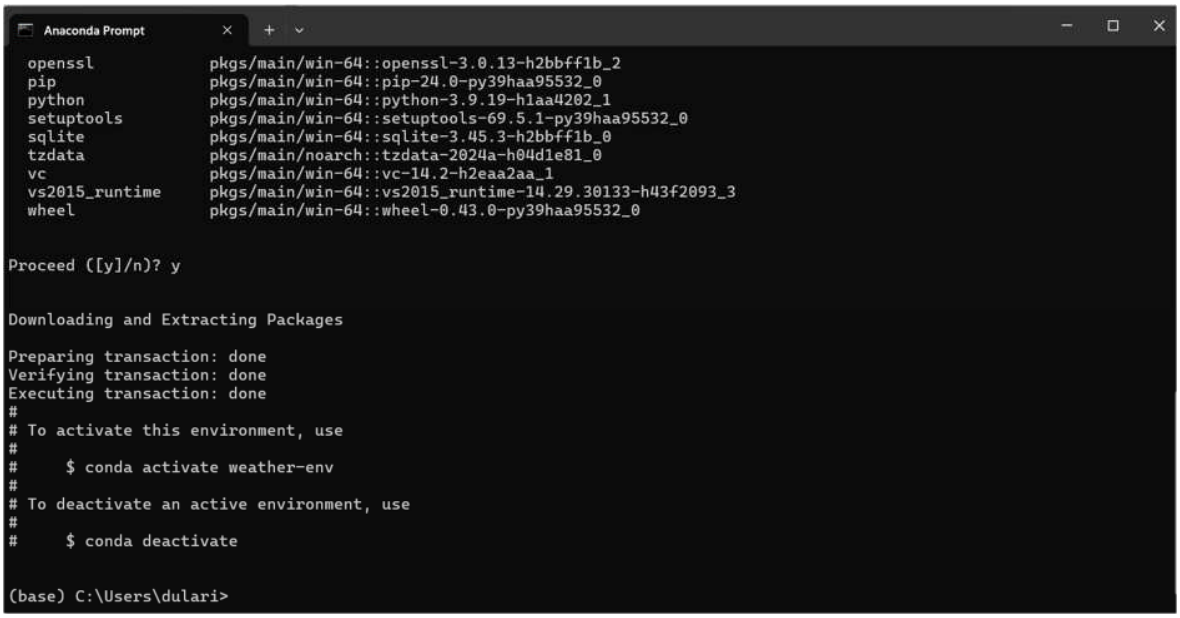
Step 1: Open Anaconda prompt.



Step 2: Creating and Activating a Virtual Environment

1. Create a Virtual Environment: conda create --name weather-env python=3.9





2. Activate the Virtual Environment:

conda activate weather-env

```
(base) C:\Users\dulari>conda activate weather-env
```

Once it is activated it will look like this

```
(weather-env) C:\Users\dulari>
```

Step 3: Installing Dependencies

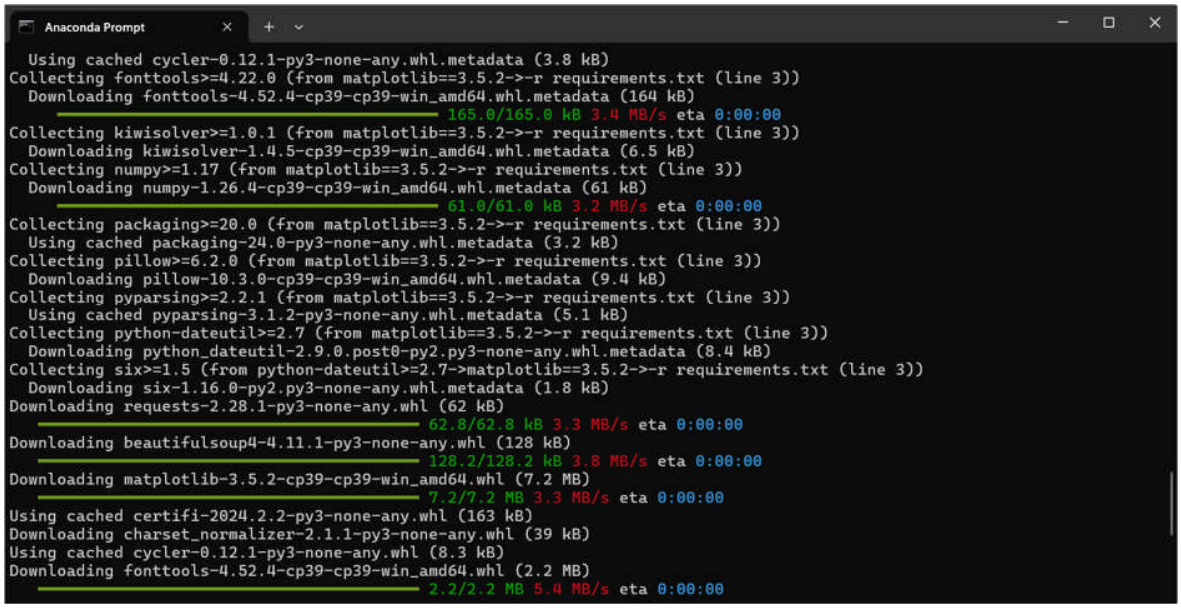
Download requirements.txt file .

1. Install Dependencies from `requirements.txt`:

pip install -r requirements.txt

```
(weather-env) C:\Users\dulari>cd Downloads
```

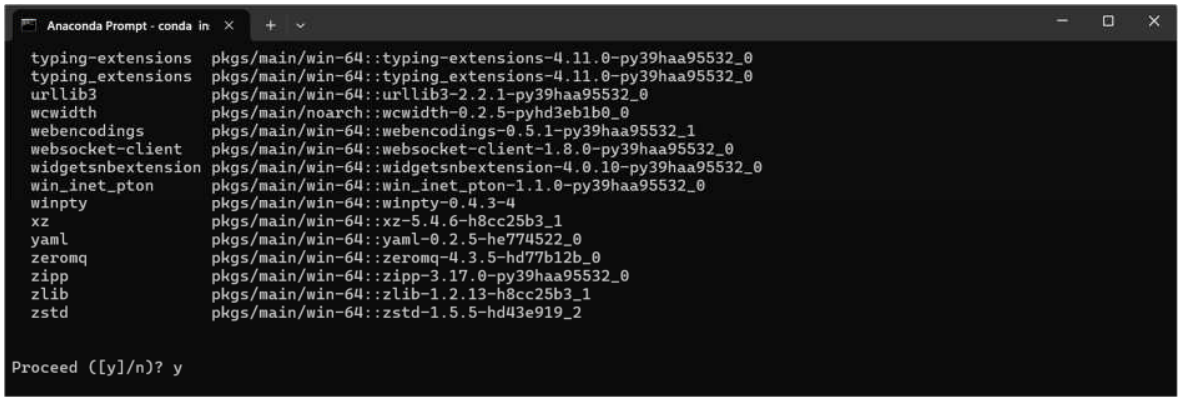
```
(weather-env) C:\Users\dulari\Downloads>pip install -r requirements.txt
```

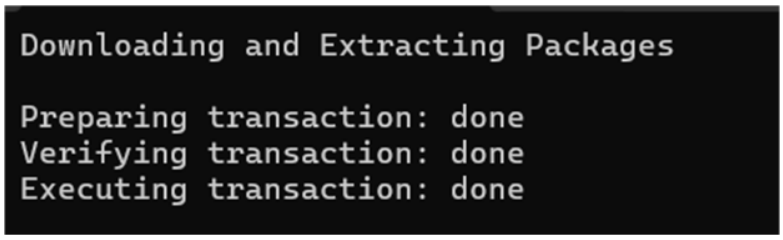


2. Install Jupyter and IPython Kernel:

conda install jupyter ipykernel

```
(weather-env) C:\Users\dulari\Downloads>conda install jupyter ipykernel
```



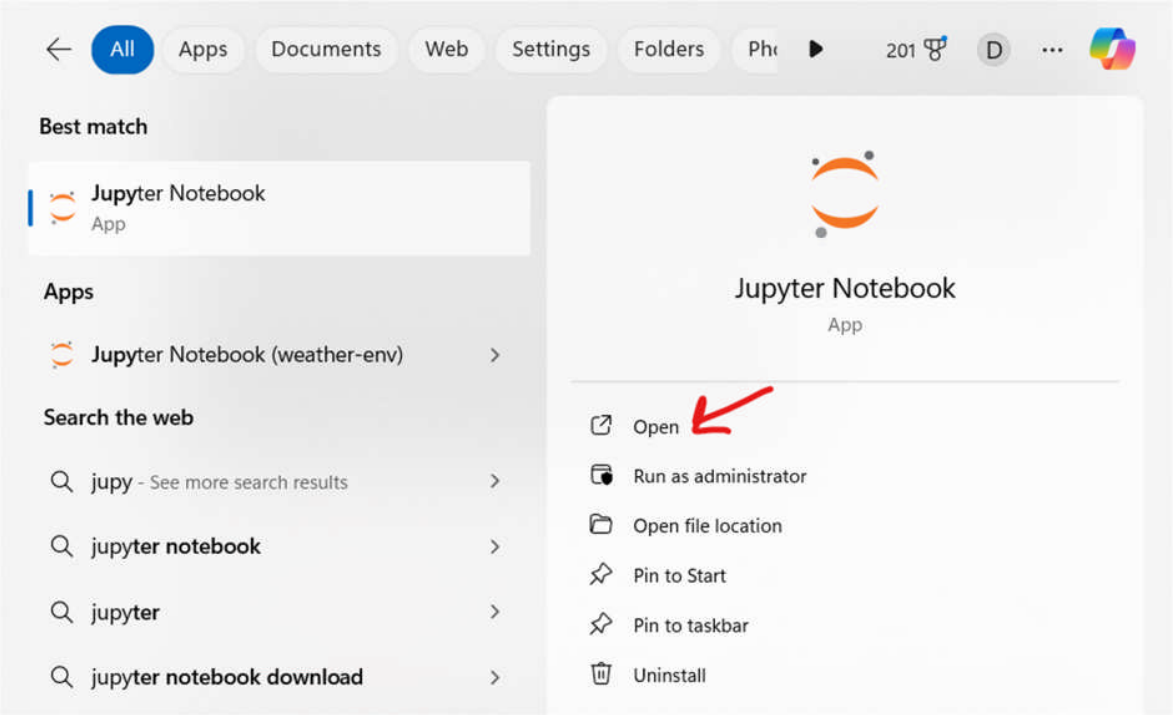


3. Create a Kernel for the Virtual Environment:

python -m ipykernel install --user --name weather-env --display-name "Python (weather-env)"

Output

Step 4: Creating the Jupyter Notebook



1. Start Jupyter Notebook:

jupyter notebook

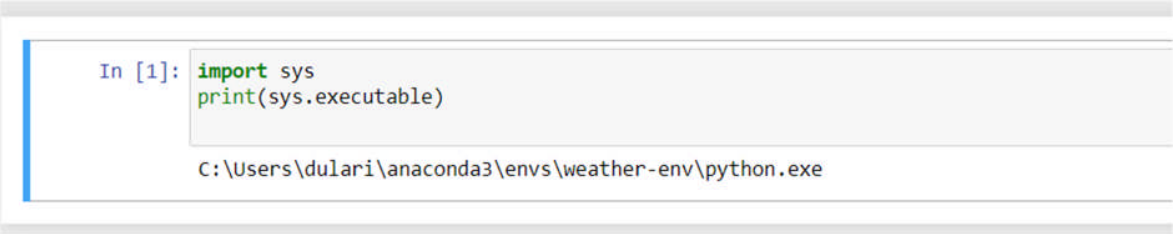
2. Create a New Notebook:

- In the Jupyter Notebook interface, click on `New` -> `Python (weather-env)` to create a new notebook that uses the `weather-env` virtual environment.

3. Verify Kernel:

- In the new notebook, run the following command to verify that the correct Python interpreter is being used:

```
import sys
print(sys.executable)
```



- This should print the path to the Python interpreter within the `weather-env` virtual environment.

Step 5: Writing the Jupyter Notebook

1. Add the Following Code to the Notebook:

```
import requests
from bs4 import BeautifulSoup

# URL of the website to scrape
url = 'https://www.bbc.com/news'

# Define the User-Agent header to mimic a browser request
headers = {
```

```
    'User-Agent': 'Mozilla/5.0 (Windows NT 10.0; Win64; x64)
AppleWebKit/537.36 (KHTML, like Gecko) Chrome/125.0.0.0
Safari/537.36'
}

# Send a GET request to the website
response = requests.get(url, headers=headers)

# Check if the request was successful
if response.status_code == 200:
    # Parse the HTML content of the page
    soup = BeautifulSoup(response.content, 'html.parser')

    # Find the elements containing the headlines
    headlines = soup.find_all('a', class_="sc-2e6baa30-0 gILusN")

    # Print the headlines
    print("Latest BBC News Headlines:")
    for headline in headlines:
        print(headline.text.strip())
else:
    print(f"Error fetching news data: {response.status_code}")
```

Output:

```
Latest BBC News Headlines:
British Broadcasting Corporation
Home
Sport
Video
Audio
Weather
Jeremy Bowen: Ukraine faces its worst crisis since the war beganThe composure Ukrainians show in the face of Russian attacks ca
nnot conceal the dangers Kyiv faces in the summer ahead.6 hrs agoNewsBBC InDepth
Singapore Airlines: 'Turbulence landed five of my family in ICU'A week on, passengers and family reveal to the BBC what happene
d on Flight SQ321.2 hrs agoNewsAsia
Modi’s party volunteers targeting 100,000 people a dayIndia’s governing party is far ahead of its rivals in digital campaignin
g, especially on WhatsApp.6 hrs agoNewsIndia
World's rarest album to go on display in AustraliaJust a single copy of the Wu-Tang Clan album exists, and only a few ears have
ever listened to it.  8 hrs agoNewsAustralia
Beckham scores Euros deal with China tech giantThe announcement comes as the Euros football tournament is due to kick off in Ge
rmany next month.7 hrs agoNewsBusiness
Singapore Airlines: 'Turbulence landed five of my family in ICU'A week on, passengers and family reveal to the BBC what happene
d on Flight SQ321.2 hrs agoNewsAsia
LIVEIsrael continues Rafah strikes after dozens killed in Sunday bombingPM Netanyahu calls the strike a "tragic mishap" but vow
s to continue the war against Hamas despite international condemnation.News
Deadly landslide threatens thousands more as hopes for survivors fadeAn evacuation alert has been put out in Papua New Guinea,
days after a deadly landslide.2 hrs agoNewsAsia
What will Trump jury decide? Here are the three optionsA verdict could come this week - the former president's conviction or ac
quittal, or there could be a mistrial.3 hrs agoNewsUS & Canada
Modi’s party volunteers targeting 100,000 people a dayIndia’s governing party is far ahead of its rivals in digital campaignin
g, especially on WhatsApp.6 hrs agoNewsIndia
```

Conclusion

This lab assignment helps you understand how to create a virtual environment, install specific dependencies using a `requirements.txt` file, and run a Jupyter Notebook within the virtual environment. This approach is crucial for maintaining clean and manageable project environments, especially when working with multiple projects with different dependencies.