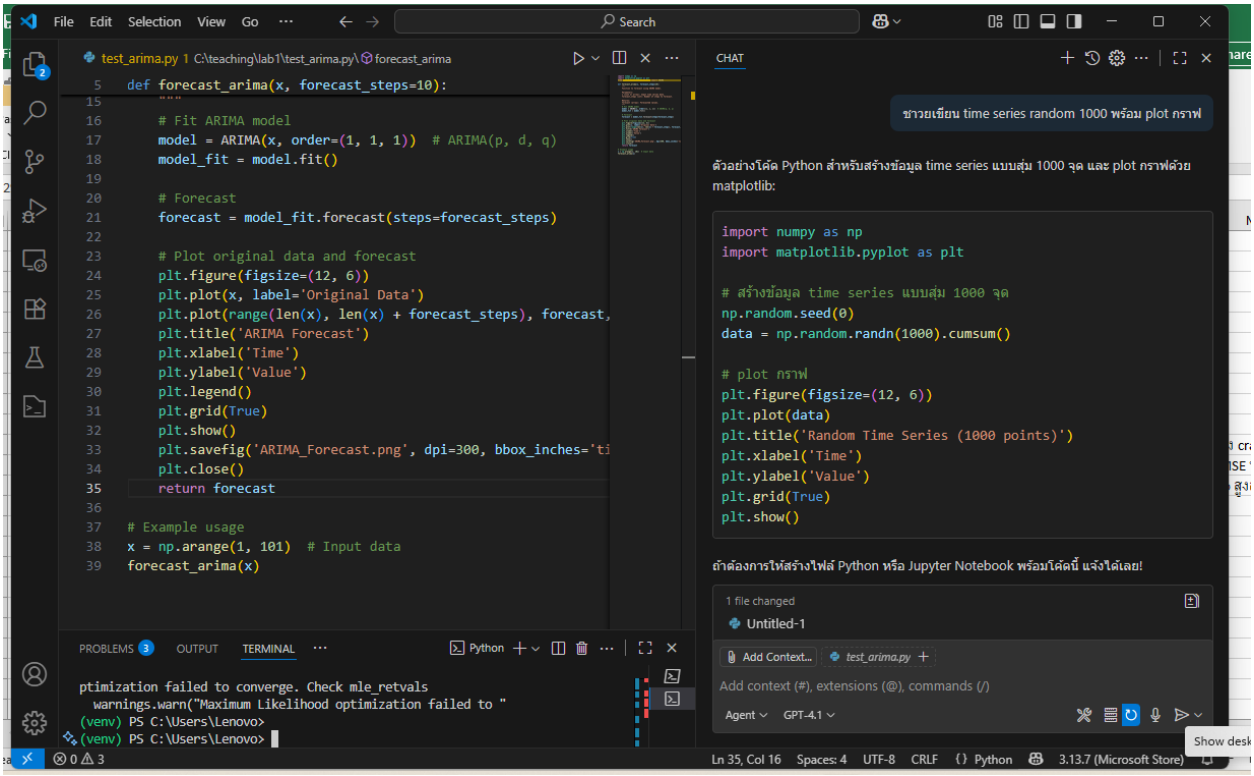

Visual studio code with AI assistance with Crl + i with prompt.”ช่วยเขียน function forecast ให้ครบหน่อยโดยใช้ input เป็น x=[1..100] forecast โดยใช้วิธี arima และ plot ผล ช่วย modified source code python too !”

```
import numpy as np
import matplotlib.pyplot as plt
from statsmodels.tsa.arima.model import ARIMA


def forecast_arima(x, forecast_steps=10):
    """
    Function to forecast using ARIMA model.


    Parameters:
    x (list or array): Input time series data.
    forecast_steps (int): Number of steps to forecast.
```

```
    Returns:
    forecast (array): Forecasted values.
    """
    # Fit ARIMA model
    model = ARIMA(x, order=(1, 1, 1))  # ARIMA(p, d, q)
    model_fit = model.fit()

    # Forecast
    forecast = model_fit.forecast(steps=forecast_steps)

    # Plot original data and forecast
    plt.figure(figsize=(12, 6))
    plt.plot(x, label='Original Data')
    plt.plot(range(len(x), len(x) + forecast_steps), forecast, label='Forecast', color='red')
    plt.title('ARIMA Forecast')
    plt.xlabel('Time')
    plt.ylabel('Value')
    plt.legend()
    plt.grid(True)
    plt.show()
    plt.savefig('ARIMA_Forecast.png', dpi=300, bbox_inches='tight', facecolor='white')
    plt.close()
    return forecast

# Example usage
```

```
x = np.arange(1, 101)  # Input data

forecast_arima(x)
```

Step to run:1 setup virtual environment :

1. Verify Python Version

Check the Python version used to install statsmodels:

2. Install statsmodels for Python 3.13

3. Create a Virtual Environment (Optional but Recommended)

If you want to use a virtual environment, create one in your project directory:

```
.\venv\Scripts\activate

C:/Users/Lenovo/AppData/Local/Microsoft/WindowsApps/python3.13.exe -m venv venv

.\venv\Scripts\activate

C:/Users/Lenovo/AppData/Local/Microsoft/WindowsApps/python3.13.exe
c:/teaching/lab1/test_arima.py
```

Activate the virtual environment:

Install statsmodels in the virtual environment:

---

4. Run the Script

After ensuring the correct environment and package installation, run your script again:
