

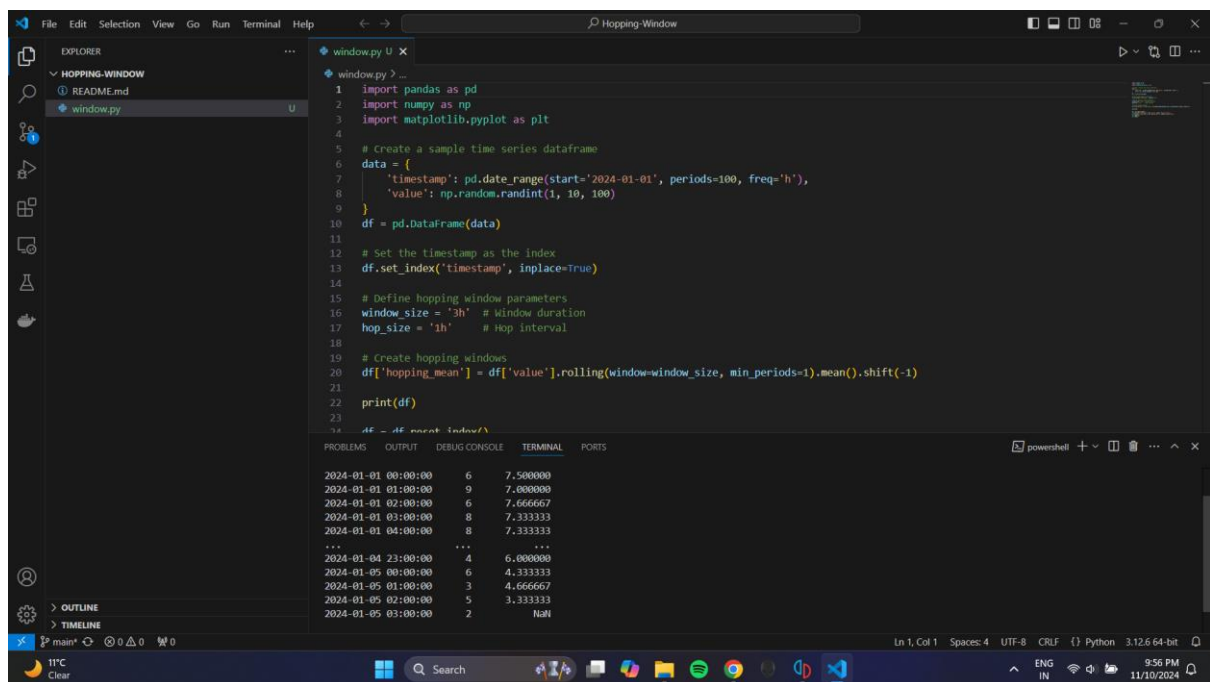
Hopping Window Assignment Report

I have implemented a basic application that generates random values between 1 and 10 to store temperature for 100 consecutive hours. This gives us a dataframe containing temperature data for one hour periods for a total of 100 hours. By configuring window size of 3 hours and hop size of 1 hour, we are able to calculate hopping mean for each hour in the data.

The calculation is done by taking the average of temperatures in a 3 hour window, considering the previous hour's value, the current hour's value, and the next hour's value.

$$\text{Hopping Window Mean Temperature } (n) = \frac{\text{Temp}(n-1) + \text{Temp}(n) + \text{Temp}(n+1)}{3}$$

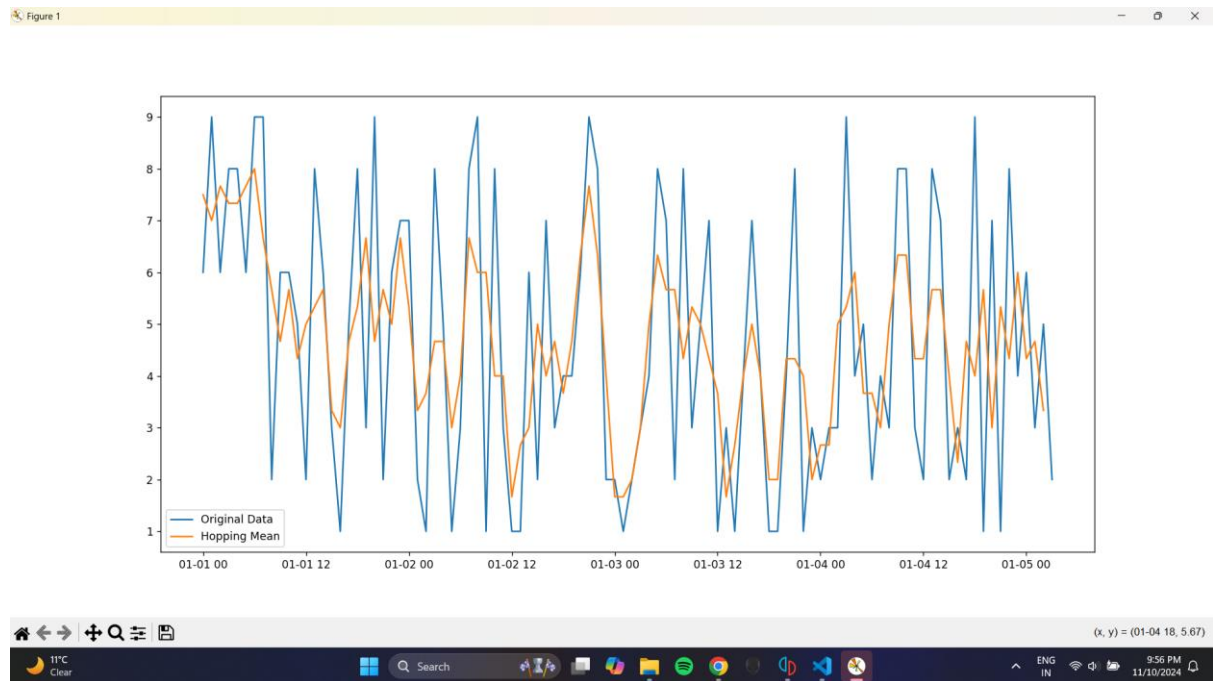
The application runs over the data and calculates the hopping mean temperature for each data point. The result looks as follows:



The screenshot shows a Visual Studio Code editor with a Python file named `window.py`. The script generates a time series of random temperature values and calculates a hopping mean using a 3-hour window. The output in the terminal shows the following data points:

Timestamp	Temperature	Hopping Mean
2024-01-01 00:00:00	6	7.500000
2024-01-01 01:00:00	9	7.000000
2024-01-01 02:00:00	6	7.666667
2024-01-01 03:00:00	8	7.333333
2024-01-01 04:00:00	8	7.333333
...
2024-01-04 23:00:00	4	6.000000
2024-01-05 00:00:00	6	4.333333
2024-01-05 01:00:00	3	4.666667
2024-01-05 02:00:00	5	3.333333
2024-01-05 03:00:00	2	NaN

It also generates a data visualization for the same, displaying the temperature and hopping window mean temperature for each data point.



The code for the same can be found on [GitHub](#).