Task 1 Report

## Installation and Execution

The installation for this task was fairly simple. After a basic installation of python, I made a requirements file including the packages listed at the top of the demo file. Running the following assured that this packages were installed.

py -m pip freeze > requirements.txt

py -m pip install -r requirements.txt

From here I ran the code within the included python debugger of Visual Studio Code. Executing on the first attempt.

A screenshot of a computer screen

Description automatically generated

## Code Explanation

The structure of the code is as follows.

First the test data is fetched from yahoo finance and transforred into the correct format, ready for training. This is achieved by:

* Converting the data into a 2D array (for future scaling)
* Scaling the data into unit values (between 0 and 1)
* Converting back into a 1D array for training
* Slicing the data into packets based on the size of data we want to use for preditions.
* Creating a 3D array of the collections of sets of closing values and their following predicted values.

Second, the neural network is setup in the following configuration:

LSTM(Input) -> Dropout -> LSTM -> Dropout -> LSTM -> Dropout -> Dense (Single value output)

At this stage the model is trained over 25 iterations (epochs).

Next, new data is fetched to test the model against. This new data is formatted in a similar fashion to the training data .A minor difference being that the new data is appended to the training data as a means to capture a larger picture of data.

These results are fed into the model and printed onto a plot.

Finally, a prediction is made on tomorrows value.