Seat No.: T19109435; Name : Aryan Sirdesai

Problem Statement : Implement the following Expert System : Stock market trading

In [1]:
```
pip install yfinance --user
```

```
Collecting yfinance
  Downloading yfinance-0.2.18-py2.py3-none-any.whl (60 kB)
     ---------------------------------------- 60.3/60.3 kB 1.1 MB/s eta 0:00:00
Collecting multitasking>=0.0.7
  Downloading multitasking-0.0.11-py3-none-any.whl (8.5 kB)
Requirement already satisfied: pandas>=1.3.0 in c:\users\aryan\anaconda3\lib\site-
packages (from yfinance) (1.4.4)
Collecting html5lib>=1.1
  Downloading html5lib-1.1-py2.py3-none-any.whl (112 kB)
     ---------------------------------------- 112.2/112.2 kB 1.6 MB/s eta 0:00:00
Requirement already satisfied: beautifulsoup4>=4.11.1 in c:\users\aryan\anaconda3
\lib\site-packages (from yfinance) (4.11.1)
Requirement already satisfied: numpy>=1.16.5 in c:\users\aryan\anaconda3\lib\site-
packages (from yfinance) (1.21.5)
Collecting pytz>=2022.5
  Downloading pytz-2023.3-py2.py3-none-any.whl (502 kB)
     ---------------------------------------- 502.3/502.3 kB 2.3 MB/s eta 0:00:00
Collecting frozendict>=2.3.4
  Downloading frozendict-2.3.8-cp39-cp39-win_amd64.whl (35 kB)
Requirement already satisfied: appdirs>=1.4.4 in c:\users\aryan\anaconda3\lib\site
-packages (from yfinance) (1.4.4)
Requirement already satisfied: cryptography>=3.3.2 in c:\users\aryan\anaconda3\lib
\site-packages (from yfinance) (37.0.1)
Requirement already satisfied: requests>=2.26 in c:\users\aryan\anaconda3\lib\site
-packages (from yfinance) (2.28.1)
Requirement already satisfied: lxml>=4.9.1 in c:\users\aryan\anaconda3\lib\site-pa
ckages (from yfinance) (4.9.1)
Requirement already satisfied: soupsieve>1.2 in c:\users\aryan\anaconda3\lib\site-
packages (from beautifulsoup4>=4.11.1->yfinance) (2.3.1)
Requirement already satisfied: cffi>=1.12 in c:\users\aryan\anaconda3\lib\site-pac
kages (from cryptography>=3.3.2->yfinance) (1.15.1)
Requirement already satisfied: six>=1.9 in c:\users\aryan\anaconda3\lib\site-packa
ges (from html5lib>=1.1->yfinance) (1.16.0)
Requirement already satisfied: webencodings in c:\users\aryan\anaconda3\lib\site-p
ackages (from html5lib>=1.1->yfinance) (0.5.1)
Requirement already satisfied: python-dateutil>=2.8.1 in c:\users\aryan\anaconda3
\lib\site-packages (from pandas>=1.3.0->yfinance) (2.8.2)
Requirement already satisfied: charset-normalizer<3,>=2 in c:\users\aryan\anaconda
3\lib\site-packages (from requests>=2.26->yfinance) (2.0.4)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\aryan\anaconda3\lib
\site-packages (from requests>=2.26->yfinance) (2022.9.14)
Requirement already satisfied: idna<4,>=2.5 in c:\users\aryan\anaconda3\lib\site-p
ackages (from requests>=2.26->yfinance) (3.3)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\aryan\anaconda3\l
ib\site-packages (from requests>=2.26->yfinance) (1.26.11)
Requirement already satisfied: pycparser in c:\users\aryan\anaconda3\lib\site-pack
ages (from cffi>=1.12->cryptography>=3.3.2->yfinance) (2.21)
Installing collected packages: pytz, multitasking, html5lib, frozendict, yfinance
Successfully installed frozendict-2.3.8 html5lib-1.1 multitasking-0.0.11 pytz-202
3.3 yfinance-0.2.18
Note: you may need to restart the kernel to use updated packages.
```

```
  WARNING: The script sample.exe is installed in 'C:\Users\aryan\AppData\Roaming\P
ython\Python39\Scripts' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warnin
g, use --no-warn-script-location.
ERROR: pip's dependency resolver does not currently take into account all the pack
ages that are installed. This behaviour is the source of the following dependency
conflicts.
conda-repo-cli 1.0.20 requires clyent==1.2.1, but you have clyent 1.2.2 which is i
ncompatible.
conda-repo-cli 1.0.20 requires nbformat==5.4.0, but you have nbformat 5.5.0 which
is incompatible.
```

In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import yfinance as yf

google = yf.Ticker("GOOG")
```

In [2]:
```
df = google.history(period='1d', interval="1m")
print(df.head())
```

```
                                 Open        High         Low       Close  \
Datetime
2023-05-24 09:30:00-04:00  121.879997  121.959999  121.570000  121.809998
2023-05-24 09:31:00-04:00  121.830002  122.050003  121.809998  121.824997
2023-05-24 09:32:00-04:00  121.830002  121.930000  121.739998  121.849998
2023-05-24 09:33:00-04:00  121.864998  122.050003  121.760002  121.959999
2023-05-24 09:34:00-04:00  121.959999  122.250000  121.839996  122.209999

                           Volume  Dividends  Stock Splits
Datetime
2023-05-24 09:30:00-04:00  1126260        0.0           0.0
2023-05-24 09:31:00-04:00   131330        0.0           0.0
2023-05-24 09:32:00-04:00   116745        0.0           0.0
2023-05-24 09:33:00-04:00   184071        0.0           0.0
2023-05-24 09:34:00-04:00   107252        0.0           0.0
```

In [3]:
```
df = google.history(period='1d', interval="1m")
df = df[['Low']]
df.head()
```

Out[3]:

	Low
Datetime	
2023-05-24 09:30:00-04:00	121.570000
2023-05-24 09:31:00-04:00	121.809998
2023-05-24 09:32:00-04:00	121.739998
2023-05-24 09:33:00-04:00	121.760002
2023-05-24 09:34:00-04:00	121.839996

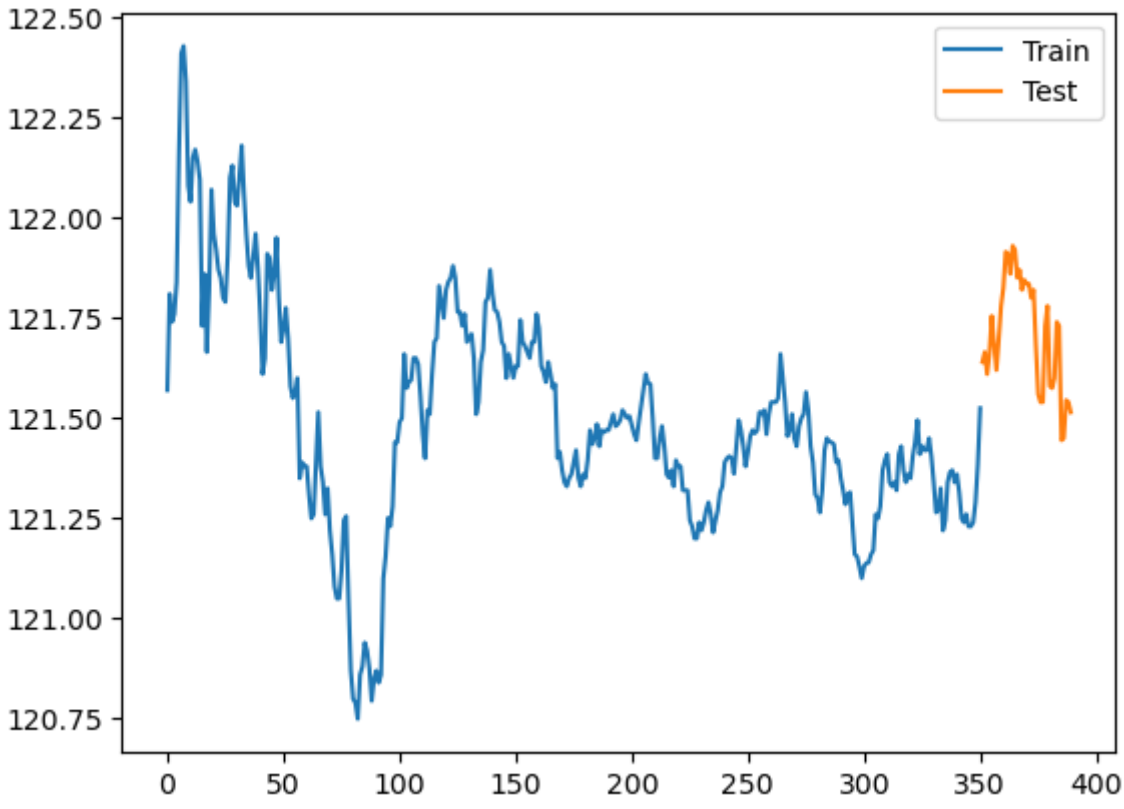
In [4]:
```
df['date'] = pd.to_datetime(df.index).time
df.set_index('date', inplace=True)
df.head()
```

Out[4]:

date	Low
09:30:00	121.570000
09:31:00	121.809998
09:32:00	121.739998
09:33:00	121.760002
09:34:00	121.839996

In [5]:
```
X = df.index.values
y = df['Low'].values
# The split point is the 10% of the dataframe length
offset = int(0.10*len(df))
X_train = X[:-offset]
y_train = y[:-offset]
X_test  = X[-offset:]
y_test  = y[-offset:]
```

In [6]:
```
plt.plot(range(0,len(y_train)),y_train, label='Train')
plt.plot(range(len(y_train),len(y)),y_test,label='Test')
plt.legend()
plt.show()
```



In [14]:
```
print(f'Real data for time 0: {y_train[len(y_train)-1]}')
print(f'Real data for time 1: {y_test[0]}')
```

```
Real data for time 0: 121.5250015258789
Real data for time 1: 121.64019775390625
```

In [ ]: