In [2]:
```
pip install alpha_vantage
```

```
Requirement already satisfied: alpha_vantage in c:\users\admin\anaconda3\lib\site-packages (2.3.1)
Requirement already satisfied: requests in c:\users\admin\anaconda3\lib\site-packages (from alpha_vantage) (2.28.1)
Requirement already satisfied: aiohttp in c:\users\admin\anaconda3\lib\site-packages (from alpha_vantage) (3.8.4)
Requirement already satisfied: yarl<2.0,>=1.0 in c:\users\admin\anaconda3\lib\site-packages (from aiohttp->alpha_vantage) (1.8.
2)
Requirement already satisfied: frozenlist>=1.1.1 in c:\users\admin\anaconda3\lib\site-packages (from aiohttp->alpha_vantage)
(1.3.3)
Requirement already satisfied: async-timeout<5.0,>=4.0.0a3 in c:\users\admin\anaconda3\lib\site-packages (from aiohttp->alpha_v
antage) (4.0.2)
Requirement already satisfied: multidict<7.0,>=4.5 in c:\users\admin\anaconda3\lib\site-packages (from aiohttp->alpha_vantage)
(6.0.4)
Requirement already satisfied: charset-normalizer<4.0,>=2.0 in c:\users\admin\anaconda3\lib\site-packages (from aiohttp->alpha_
vantage) (2.0.4)
Requirement already satisfied: attrs>=17.3.0 in c:\users\admin\anaconda3\lib\site-packages (from aiohttp->alpha_vantage) (21.4.
0)
Requirement already satisfied: aiosignal>=1.1.2 in c:\users\admin\anaconda3\lib\site-packages (from aiohttp->alpha_vantage) (1.
3.1)
Requirement already satisfied: idna<4,>=2.5 in c:\users\admin\anaconda3\lib\site-packages (from requests->alpha_vantage) (3.3)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\admin\anaconda3\lib\site-packages (from requests->alpha_vantag
e) (1.26.11)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\admin\anaconda3\lib\site-packages (from requests->alpha_vantage)
(2022.9.14)
Note: you may need to restart the kernel to use updated packages.
```

In [3]:
```
import pandas as pd
from alpha_vantage.timeseries import TimeSeries
```

In [4]:
```
from pandas.core.groupby.groupby import Timestamp
#ScriptData Class
class ScriptData():
    #fetching data
    def fetch_intraday_data(self,script):
        ts = TimeSeries(key='T279YIRDA8MZE6YG',output_format='pandas',indexing_type='integer')
        # Get json object with the intraday data and another with  the call's metadata
        data, meta_data = ts.get_intraday(script,interval='60min', outputsize='full')
        return data
    #converting data
    def convert_intraday_data(self,script):
        df=pd.DataFrame(script)       #DataFrame
        df.rename(columns={'index':'Timestamp',
                           '1. open':'Open',
                           '2. high':'High',
                           '3. low':'Low',
                           '4. close':'Close',
                           '5. volume':'Volume'},inplace=True)
        df['Timestamp'] = pd.to_datetime(df['Timestamp'])
        df['Volume'] = df['Volume'].astype(int)
        print(df.info())
        return df
```

In [5]:
```
#Entering choice from following script
script=['GOOGL','AAPL','MSFT','TSLA']
n=int(input("Enter your choice: "))
Select=script[n]
script_data=ScriptData()
fetched_intraday_Data=script_data.fetch_intraday_data(Select)
print(fetched_intraday_Data)
fetched_converted_Data=script_data.convert_intraday_data(fetched_intraday_Data)
print(fetched_converted_Data)
```

```
Enter your choice: 1
                    index   1. open   2. high    3. low  4. close  5. volume
index
0      2023-02-14 20:00:00  153.0800  153.0900  152.7000  152.8400    52909.0
1      2023-02-14 19:00:00  153.2000  153.2000  153.0600  153.0900    40175.0
2      2023-02-14 18:00:00  153.0800  153.2000  153.0166  153.1800   259770.0
3      2023-02-14 17:00:00  153.2000  153.2000  152.8500  153.0900  2612717.0
4      2023-02-14 16:00:00  153.2450  153.7300  152.9499  153.1000  7334349.0
...                    ...       ...       ...       ...       ...        ...
603    2022-12-20 09:00:00  131.9819  132.3309  130.2367  131.4733   282354.0
604    2022-12-20 08:00:00  131.9121  132.0317  131.2838  131.2938   114990.0
605    2022-12-20 07:00:00  131.7725  132.0816  131.7525  131.9121    15333.0
606    2022-12-20 06:00:00  131.6528  131.8223  131.5830  131.7226    16775.0
607    2022-12-20 05:00:00  131.8722  132.1115  131.3835  131.5531    55109.0

[608 rows x 6 columns]
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 608 entries, 0 to 607
Data columns (total 6 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
 0   Timestamp  608 non-null    datetime64[ns]
 1   Open       608 non-null    float64
 2   High       608 non-null    float64
 3   Low        608 non-null    float64
 4   Close      608 non-null    float64
 5   Volume     608 non-null    int32
dtypes: datetime64[ns](1), float64(4), int32(1)
memory usage: 26.2 KB
None
                Timestamp      Open      High       Low     Close   Volume
index
0     2023-02-14 20:00:00  153.0800  153.0900  152.7000  152.8400    52909
1     2023-02-14 19:00:00  153.2000  153.2000  153.0600  153.0900    40175
2     2023-02-14 18:00:00  153.0800  153.2000  153.0166  153.1800   259770
3     2023-02-14 17:00:00  153.2000  153.2000  152.8500  153.0900  2612717
4     2023-02-14 16:00:00  153.2450  153.7300  152.9499  153.1000  7334349
...                   ...       ...       ...       ...       ...      ...
603   2022-12-20 09:00:00  131.9819  132.3309  130.2367  131.4733   282354
604   2022-12-20 08:00:00  131.9121  132.0317  131.2838  131.2938   114990
605   2022-12-20 07:00:00  131.7725  132.0816  131.7525  131.9121    15333
606   2022-12-20 06:00:00  131.6528  131.8223  131.5830  131.7226    16775
607   2022-12-20 05:00:00  131.8722  132.1115  131.3835  131.5531    55109

[608 rows x 6 columns]
```

In [7]:
```
'GOOGL' in script
```

Out[7]: True

In [8]:
```
'AAPL' in script
```

Out[8]: True

In [9]:
```
'NVDA' in script
```

Out[9]: False

In [10]:
```
# Question 2
```

In [11]:
```
import numpy as np
#indicator1 function
def indicator1(df,timeperiod):
  df1=pd.DataFrame()       #DataFrame
  df1['Timestamp']=df['Timestamp']
  df1['indicator']=np.nan
  for ind in df.index:
    if ind<timeperiod:
      pass
    else:
      Average=0
      Sum=0
      for j in range(timeperiod):
        Sum+=df.loc[ind-j]['Close']
      Average=Sum/timeperiod
      df1.at[ind,'indicator']=Average
  print(df1)
  return df1

#Taking timeperiod from user
timeperiod=int(input("Enter the timeperiod:"))
indicat=indicator1(fetched_converted_Data,timeperiod)
```

```
Enter the timeperiod:3
               Timestamp   indicator
index
0     2023-02-14 20:00:00         NaN
1     2023-02-14 19:00:00         NaN
2     2023-02-14 18:00:00         NaN
3     2023-02-14 17:00:00  153.120000
4     2023-02-14 16:00:00  153.123333
...                   ...         ...
603   2022-12-20 09:00:00  131.446700
604   2022-12-20 08:00:00  131.240600
605   2022-12-20 07:00:00  131.559733
606   2022-12-20 06:00:00  131.642833
607   2022-12-20 05:00:00  131.729267

[608 rows x 2 columns]
```

In [12]:
```
## Question 3
```

In [13]:
```
df2=pd.DataFrame()       #DataFrame
#Strategy class
class Strategy:
  def fetch_intraday_hist_day(self,df):
    df2['Close_data']=df['Close']
  def fetch_indicator_data(self,df):
    df2['indicator_Data']=df['indicator']
    return df2

Strate=Strategy()
Strate.fetch_intraday_hist_day(fetched_converted_Data)
Signal_Data=Strate.fetch_indicator_data(indicat)
print(Signal_Data)
```

```
       Close_data  indicator_Data
index
0        152.8400             NaN
1        153.0900             NaN
2        153.1800             NaN
3        153.0900      153.120000
4        153.1000      153.123333
...           ...             ...
603      131.4733      131.446700
604      131.2938      131.240600
605      131.9121      131.559733
606      131.7226      131.642833
607      131.5531      131.729267

[608 rows x 2 columns]
```

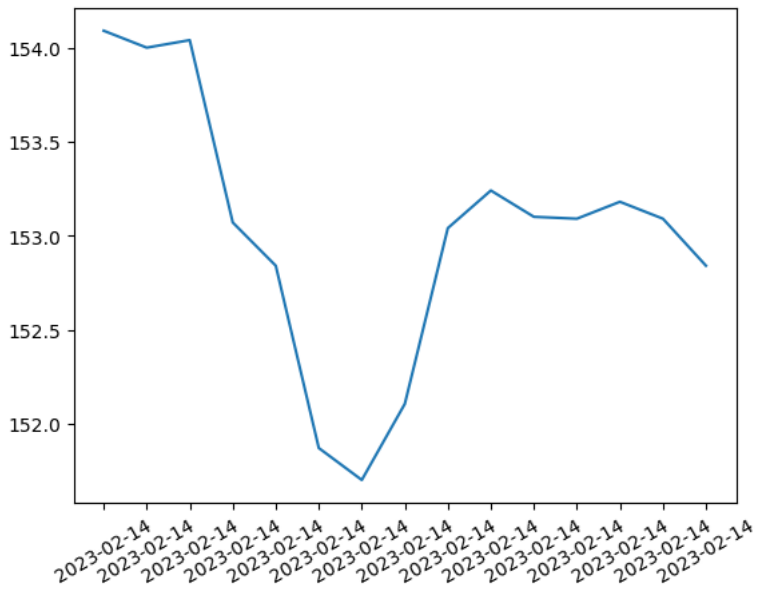
In [14]:
```
#Signal Function
def Signal_function(df3):
  signals=pd.DataFrame()      #DataFrame
  signals['timestamp']=indicat['Timestamp']
  for i in df3.index:
    if df3.loc[i]['indicator_Data']>df3.loc[i]['Close_data']:
      signals.at[i,'signal']="BUY"
    elif df3.loc[i]['indicator_Data']<df3.loc[i]['Close_data']:
      signals.at[i,'signal']="SELL"
    else:
      signals.at[i,'signal']="NO SIGNAL"
  return signals

Signal=Signal_function(Signal_Data)
print(Signal)
```

```
                timestamp     signal
index
0     2023-02-14 20:00:00  NO SIGNAL
1     2023-02-14 19:00:00  NO SIGNAL
2     2023-02-14 18:00:00  NO SIGNAL
3     2023-02-14 17:00:00        BUY
4     2023-02-14 16:00:00        BUY
...                   ...        ...
603   2022-12-20 09:00:00       SELL
604   2022-12-20 08:00:00       SELL
605   2022-12-20 07:00:00       SELL
606   2022-12-20 06:00:00       SELL
607   2022-12-20 05:00:00        BUY

[608 rows x 2 columns]
```

In [15]:
```
import matplotlib.pyplot as plt
ax=plt.subplots()
x=Signal['timestamp'].head(15)
y=Signal_Data['Close_data'].head(15)
plt.plot(x,y)
plt.xticks(x,fontsize= 10,rotation =30)
#for ind in Signal.index():
#  if Signal['signal']=='BUY':
#    plt.xticks(Signal.loc[ind]['timestamp'],fontsize= 15,rotation =30,facecolor='PINK')
#  elif Signal['signal']=='SELL':
#    plt.xticks(Signal.loc[ind]['timestamp'],fontsize= 15,rotation =30,color='BLUE')
#  else:
#    plt.xticks(Signal.loc[ind]['timestamp'],fontsize= 15,rotation =30,color='YELLOW')
plt.show()
```



In [16]:
```
def get_signal(Signal):
  B_or_S= pd.DataFrame()
  i=0
  for ind in Signal.index:
    B_or_S = Signal[(Signal['signal'] == 'BUY') | (Signal['signal'] == 'SELL')]
    return B_or_S
got_signal=get_signal(Signal)
print(got_signal)
```

```
                timestamp signal
index
3     2023-02-14 17:00:00    BUY
4     2023-02-14 16:00:00    BUY
5     2023-02-14 15:00:00   SELL
6     2023-02-14 14:00:00    BUY
7     2023-02-14 13:00:00    BUY
...                   ...    ...
603   2022-12-20 09:00:00   SELL
604   2022-12-20 08:00:00   SELL
605   2022-12-20 07:00:00   SELL
606   2022-12-20 06:00:00   SELL
607   2022-12-20 05:00:00    BUY

[603 rows x 2 columns]
```

In [17]:
```
## Question 4
```

In [19]:
```
pip install pyalgotrading
```

```
Collecting pyalgotrading
  Downloading pyalgotrading-2022.9.3-py3-none-any.whl (29 kB)
Requirement already satisfied: pandas>=0.25.3 in c:\users\admin\anaconda3\lib\site-packages (from pyalgotrading) (1.4.4)
Requirement already satisfied: requests>=2.24.0 in c:\users\admin\anaconda3\lib\site-packages (from pyalgotrading) (2.28.1)
Requirement already satisfied: pytz>=2020.1 in c:\users\admin\anaconda3\lib\site-packages (from pandas>=0.25.3->pyalgotrading)
(2022.1)
Requirement already satisfied: numpy>=1.18.5 in c:\users\admin\anaconda3\lib\site-packages (from pandas>=0.25.3->pyalgotrading)
(1.21.5)
Requirement already satisfied: python-dateutil>=2.8.1 in c:\users\admin\anaconda3\lib\site-packages (from pandas>=0.25.3->pyalg
otrading) (2.8.2)
Requirement already satisfied: certifi>=2017.4.17 in c:\users\admin\anaconda3\lib\site-packages (from requests>=2.24.0->pyalgot
rading) (2022.9.14)
Requirement already satisfied: charset-normalizer<3,>=2 in c:\users\admin\anaconda3\lib\site-packages (from requests>=2.24.0->p
yalgotrading) (2.0.4)
Requirement already satisfied: urllib3<1.27,>=1.21.1 in c:\users\admin\anaconda3\lib\site-packages (from requests>=2.24.0->pyal
gotrading) (1.26.11)
Requirement already satisfied: idna<4,>=2.5 in c:\users\admin\anaconda3\lib\site-packages (from requests>=2.24.0->pyalgotradin
g) (3.3)
Requirement already satisfied: six>=1.5 in c:\users\admin\anaconda3\lib\site-packages (from python-dateutil>=2.8.1->pandas>=0.2
5.3->pyalgotrading) (1.16.0)
Installing collected packages: pyalgotrading
Successfully installed pyalgotrading-2022.9.3
Note: you may need to restart the kernel to use updated packages.
```

In [ ]:
```
```