

```
1 # This program prints 5 days 1 minute tick data with corresponding volume and TR for each minute and also plots/prints the information about the options related

1 # from google.colab import drive
2 # drive.mount('/content/drive')

1 import pandas as pd
2 import numpy as np
3 import matplotlib.pyplot as plt
4 import seaborn as sns
5 import yfinance as yf
6 from datetime import datetime,timedelta
7 from matplotlib import dates as mdates
8 import time
9 import pytz
10 import os
11 from pathlib import Path
12 import plotly.graph_objects as go
13
14 from plotly.subplots import make_subplots
15
```

```
1 ! pip install -U kaleido #for saving plotly objects
```

```
→ Collecting kaleido
  Downloading kaleido-0.2.1-py2.py3-none-manylinux1_x86_64.whl.metadata (15 kB)
  Downloading kaleido-0.2.1-py2.py3-none-manylinux1_x86_64.whl (79.9 MB)
    ━━━━━━━━━━━━━━━━━━━━━━━━━━━━ 79.9/79.9 MB 8.5 MB/s eta 0:00:00
Installing collected packages: kaleido
Successfully installed kaleido-0.2.1
```

```
1 sns.set_theme(style="darkgrid")
```

```
1 #local time setting
2 local_tz = pytz.timezone('US/Eastern')
3 print(f"current time: {datetime.now(local_tz)}")
```

```
→ current time: 2025-03-15 16:39:42.785751-04:00
```

```
1 #check if dirs exists otherwise create it
2 dir_name='stock_information'
3 directory_path=Path(f"./{dir_name}")
4 html_path=Path(f"{directory_path}/htmlplot")
5
6 if not directory_path.exists():
7   directory_path.mkdir(parents=True)
8 if not html_path.exists():
9   html_path.mkdir(parents=True)
10
```

```

11 opt_path=directory_path
12

1 class minute_data_loader:
2     def __init__(self,directory_path,save_dir):
3         self.directory_path=directory_path
4         #self.save_dir=save_dir
5
6     def download_and_save(self,symbol):
7         print(50*"=")
8         day=5;interval='1m'
9         print(f"downloading and saving {day} days {interval} data for symbol: {symbol}\n")
10        data = yf.download(symbol, period=f'{5}d', interval=interval,group_by='ticker')
11        dfs={date:group_df for date,group_df in data.groupby(data.index.date)}
12        date_values=list(dfs.keys())
13        print(f"date values: {date_values}")
14
15        for date in date_values:
16            print(f"date: {date} symbol: {symbol}\n")
17
18            temp_df1=dfs[date].round(2)
19            temp_df=temp_df1[symbol] #this helps to solve multi index in saving and retriving later
20            print(temp_df.head().to_string());print(temp_df.tail().to_string())
21            save_file_name=f'{self.directory_path}/{symbol}_{date}.csv'
22            print(f"\nsaving data frame as : {save_file_name}\n")
23            temp_df.to_csv(f'{save_file_name}')
24
25    def listing_csv_files(self):
26        file_list=sorted([f for f in os.listdir(self.directory_path) if f.endswith('.csv')])
27        # for filename in file_list:
28        #     if filename.endswith(".csv"):
29        #         print(filename)
30        return file_list
31
32    def list_csv_files_for_symbol(self,symbol):
33        '''csv files for given ticker in the given directory'''
34        file_list=sorted([f for f in os.listdir(self.directory_path) if f.endswith('.csv') and f.startswith(symbol)])
35        return file_list
36
37    # def get_date_time(self,index):
38    #     return index.strftime('%H:%M')
39
40    # def filter_time_df(self,df):
41    #     df.index=pd.Series(df.index).apply(self.get_date_time)
42    #     return df.round(2)
43
44    def get_n_largest_volume_df(self,use_file,resampling=5,count=20,largest=True):
45        ...
46        get n largest volume of a dataframe in millions with time as index
47        ...
48        r=f'{resampling}min'
49

```

```

50     print(f'reading file: {use_file}')
51
52     df=pd.read_csv(f'{self.directory_path}/{use_file}')
53
54     last_price=df['Adj Close'].iloc[-1];symbol=use_file.split('_')[0]
55     print(f'symbol: {symbol}:\nlast_price: {last_price}')
56
57     df['Datetime']=pd.to_datetime(df['Datetime'])
58     df=df.set_index('Datetime')
59
60
61     #print(df.head().to_string())
62     #index=df.index
63     #symbol=index[0].split('_')[0]
64     date=df.index.date[0]
65     day_name=df.index.day_name()[0]
66
67
68     #day_name=df['Datetime'].map(lambda x:x.strftime('%A'))
69     print(f"date: {date} {day_name} with {r}")
70     temp_df=df.resample(r).sum()
71     #total volume
72     #plot resampled volume vs time
73     # temp_df['Volume'].plot(kind='bar',figsize=(15,8))
74     total_volume=round(temp_df.Volume.sum()/10**6,2)
75     print(f'Total Volume: {total_volume:.2f}M')
76
77     #max volume
78     max_volume_df=temp_df.nlargest(count,'Volume') if largest else temp_df.nsmallest(count,'Volume')
79     max_volume_df[f'Volume']=max_volume_df['Volume']/10**6
80     max_volume_df[f'{symbol.upper()}_volume_pct_{date}']=max_volume_df['Volume']*100/total_volume
81     max_volume_df.rename(columns={'Volume':f'{symbol.upper()}_volume_{date}'},inplace=True)
82
83     max_volume_df.index=max_volume_df.index.map(lambda x:x.strftime('%H:%M'))
84
85     #max_volume_df.index=pd.Series(max_volume_df.index).apply(self.get_date_time)
86     max_volume_df=max_volume_df.round(2).reset_index(drop=False)
87     #print(max_volume_df.to_string())
88     return symbol,last_price,total_volume,day_name,resampling,max_volume_df.iloc[:,[0,6,7]]
89
90
91     def volume_df_plot(self,use_file,ax,resampling=1,largest=True,count=20):
92         r=f'{resampling}T'
93
94         print(f'reading file: {use_file}')
95
96         df=pd.read_csv(f'{self.directory_path}/{use_file}')
97
98         last_price=df['Adj Close'].iloc[-1];symbol=use_file.split('_')[0]
99         print(f'symbol: {symbol}:\nlast_price: {last_price}')
100
101

```

```

102
103
104 df['Datetime']=pd.to_datetime(df['Datetime'])
105 df=df.set_index('Datetime')
106
107 print(df.head().to_string())
108 #index=df.index
109 #symbol=index[0].split('_')[0]
110 date=df.index.date[0]
111 day_name=df.index.day_name()[0]
112
113
114 #day_name=df['Datetime'].map(lambda x:x.strftime('%A'))
115 print(f"date: {date} {day_name} with {r}")
116 temp_df=df.resample(r).sum()
117 #total volume
118 #plot resampled volume vs time
119 # temp_df['Volume'].plot(kind='bar',figsize=(15,8))
120 max_volume=round(temp_df.Volume.sum()/10**6,2)
121 print(f'Total Volume: {max_volume:.2f}M')
122
123 #max volume
124 max_volume_df=temp_df.nlargest(count,'Volume') if largest else temp_df.nsmallest(count,'Volume')
125 max_volume_df['Volume']=max_volume_df['Volume']/10**6
126 max_volume_df['volume_pct']=max_volume_df['Volume']*100/max_volume
127
128 max_volume_df.index=max_volume_df.index.map(lambda x:x.strftime('%m-%d-%H:%M'))
129
130 #max_volume_df.index=pd.Series(max_volume_df.index).apply(self.get_date_time)
131 max_volume_df=max_volume_df.round(2)
132
133 #print(max_volume_df.to_string())
134 ax=max_volume_df.plot(kind='bar',y='Volume',figsize=(12,8))
135 high_low='Highest' if largest else 'Lowest'
136 ax.set_xlabel('Time');ax.set_ylabel('Volume(M)');ax.set_title(f'Top {count} {high_low} [{resampling}-min] Volume for {symbol} on {date} [{day_name}]')
137 #bar labels
138 labels=max_volume_df['Volume'].astype(str)+['+'+max_volume_df['volume_pct'].astype(str)+'%']
139 labels=labels.to_list()
140 #putting total volume text in the plot
141 bbox=dict(facecolor='yellow', edgecolor='red', alpha=0.5,boxstyle='round,pad=0.5')
142 ax.text(0.5,0.5,f'Total Volume: {max_volume:.2f} M [{day_name}]',transform=ax.transAxes,fontsize=15,bbox=bbox)
143 #print(labels)
144 for container in ax.containers:
145     ax.bar_label(container,labels=labels,rotation=60,color='brown',padding=3,fontsize=8)
146 plt.tight_layout()
147 return ax
148 #plt.show()
149
150 def get_6days_volume_plot(self,symbol,resampling=5,count=20,largest=True):
151
152     six_days_list=self.list_csv_files_for_symbol(symbol)[::-1][:5] #It should be 5 for data from yahoo-finance
153     print(f'five_days_list: {six_days_list}')

```

```

154
155     symbo_list=[]
156     last_price_list=[]
157     total_volume_list=[]
158     max_volume_df_list=[]
159     day_name_list=[]
160     resample_list=[]
161
162     for i in six_days_list:
163         symbol, last_price, total_volume, day_name, resample, df=self.get_n_largest_volume_df(i, resampling=5, count=20, largest=True)
164         symbo_list.append(symbol)
165         last_price_list.append(last_price)
166         total_volume_list.append(total_volume)
167         day_name_list.append(day_name)
168         resample_list.append(resample)
169         max_volume_df_list.append(df)
170
171     #max_volume_df_list
172     merged_df=max_volume_df_list[0]
173     for i in max_volume_df_list[1:]:
174         merged_df=merged_df.merge(i,on='Datetime',how='outer')
175
176     axes=merged_df.set_index('Datetime').plot(kind='bar',figsize=(20,30),subplots=True,layout=(6,2),sharex=False)
177     bbox=dict(facecolor='yellow', edgecolor='red', alpha=0.5,boxstyle='round,pad=0.5')
178     bbox1=dict(facecolor='pink', edgecolor='red', alpha=0.5,boxstyle='round,pad=0.5')
179
180     for c,ax in enumerate(axes.flatten()):
181         ax.set_xlabel('Time');ax.set_ylabel('Volume(M)');
182         l=c//2 #label index
183         info_text=f'''
184             symbol      : {symbo_list[l]}
185             last_price   : {last_price_list[l]}
186             total_volume : {total_volume_list[l]} M
187             day_name    : {day_name_list[l]}
188             resample    : {resample_list[l]} min(s)
189             ...
190             if c%2==0:ax.text(0.5,0.5,info_text,transform=ax.transAxes,fontsize=15,bbox=bbox)
191             else:ax.text(0.5,0.5,info_text,transform=ax.transAxes,fontsize=15,bbox=bbox1)
192             #bar labels
193             for container in ax.containers:
194                 labels=[f'{bar.get_height()}' if bar.get_height()!=0 else '' for bar in container]
195                 ax.bar_label(container,rotation=90,color='magenta',padding=3,fontsize=8,labels=labels)
196     plt.tight_layout()
197     save_file_name=f'{self.directory_path}/{symbol}_6days_volume.pdf'
198     print(f'saving plot as: {save_file_name}')
199     plt.savefig(save_file_name)
200     plt.show()
201
202
203
204
205

```

206
207

1

```
1 # test=minute_data_loader(directory_path,directory_path)
2 # test.download_and_save('NVDA')

1 class option_data_loader:
2     def __init__(self,directory_path):
3         self.directory_path=directory_path
4
5     def delete_old_files(self,any_dir_path, days_threshold,want_to_remove=False):
6         # Calculate the time in seconds for the threshold
7         print(f'Deleting files older than {days_threshold} in direcotry {any_dir_path}')
8         current_time = time.time()                                     # time since Jan 1, 1970 in seconds
9         time_threshold = current_time - (days_threshold * 86400) # 86400 seconds in a day
10
11    #get the list of files in directory
12    for filename in os.listdir(any_dir_path):
13        file_path=os.path.join(any_dir_path,filename)           #get the file path
14        #print(file_path)
15        if os.path.isfile(file_path):
16            file_mod_time=os.path.getmtime(file_path)          #file modification since Jan 1, 1970 in seconds
17            #print(file_mod_time)
18            if file_mod_time<time_threshold:                  #checking if the modification time is less than threshold time
19
20                if (want_to_remove):
21                    print(f'Deleting file: {file_path}')
22                    os.remove(file_path)
23
24    def percentage_between_two(self,first,second):
25        total=first+second
26        return round(first/total*100,0),round(second/total*100,0)
27
28
29    #get option plots
30    def get_option_info_for(self,symbol,exp_idx,strike_range=20):
31        #exp_idx>0 (first date) etc.
32
33        ticker = yf.Ticker(symbol)  #ticker object
34
35        # Get the expiration dates for options
36        expirations = ticker.options
37        expiration=expirations[exp_idx]
38        print(f"Available expiration dates: {expirations}\n")
39
40
41        print(f'Applied expiration date: {expiration}')
42        # Get the option chain for the selected expiration date
43        option_chain = ticker.option_chain(expiration)
```

```

44
45     # Separate call and put options data
46     calls = option_chain.calls
47     puts = option_chain.puts
48
49     #change the time zone for lastTradeDate
50     calls['lastTradeDate']=(calls['lastTradeDate']).dt.tz_convert('US/Eastern')
51     puts['lastTradeDate']=(puts['lastTradeDate']).dt.tz_convert('US/Eastern')
52
53     #printinfo
54     # print(f'call options for {symbol} on {expiration}')
55     # print(calls.head().to_string())
56     # print(f'put options for {symbol} on {expiration}')
57     # print(puts.head().to_string())
58
59     #merging calls and puts dataframe
60     merged=pd.merge(calls.copy(),puts.copy(),on='strike',suffixes=('_call','_put'))
61
62     #print(f'merged dataframe:\n{merged.head().to_string()}' )
63
64     #select columns
65     temp_col=['contractSymbol','volume','openInterest','impliedVolatility','lastTradeDate']
66     my_columns=['strike']+ [f'{i}_call' for i in temp_col]+[f'{i}_put' for i in temp_col]
67     #print(f'my_columns: {my_columns}' )
68
69     merged_df=merged[my_columns]
70     merged_df.set_index('strike',inplace=True)
71     #print(f'merged_df:\n{merged_df.head().to_string()}' )
72     last_price = ticker.history(period='1d')['Close'].iloc[-1].round(2)
73
74     print(f"The last closing price of {symbol} is: {last_price}")
75     #sym=r'$\textcolor{red}{\symbolname}$'
76     template_title=f'{{}} for {symbol} [LAST: {last_price}] for expiration date: {expiration}'
77
78     #print(template_title.format('TEST'))
79
80     #apply the range to strike price
81
82     # if symbol in ['SPY','QQQ','DIA','IWM','NVDA']:strike_range=15
83     # if symbol in ['META','TSLA']:strike_range=30
84     price_range=f'{last_price-strike_range:.0f}<=strike<={last_price+strike_range:.0f}'
85     print(f'price_range: {price_range}')
86     merged_df=merged_df.query(price_range)
87
88     return merged_df,template_title,last_price
89
90
91     def plot_columns_template(self,df,cols,layout,tit,last_price,template_title):
92
93         axes=df[cols].plot(kind='bar',figsize=(20,8),title=template_title.format(tit),subplots=True,sharex=False,layout=layout)
94
95

```

```

96     temp_df=df[cols].reset_index(drop=False) #temporary df
97     temp_df_above=temp_df[temp_df['strike']>last_price]
98     temp_df_below=temp_df[temp_df['strike']<last_price]
99
100    # print(f'call_oi{temp_df[cols[0]].to_list()}')
101
102    total_sum=temp_df[cols].sum().to_list()
103    above_sum=temp_df_above[cols].sum().to_list()
104    below_sum=temp_df_below[cols].sum().to_list()
105
106
107    total_1_pct, total_3_pct=self.percentage_between_two(total_sum[0],total_sum[2])
108    total_2_pct, total_4_pct=self.percentage_between_two(total_sum[1],total_sum[3])
109    above_1_pct, below_1_pct=self.percentage_between_two(above_sum[0],below_sum[0])
110    above_2_pct, below_2_pct=self.percentage_between_two(above_sum[1],below_sum[1])
111    above_3_pct, below_3_pct=self.percentage_between_two(above_sum[2],below_sum[2])
112    above_4_pct, below_4_pct=self.percentage_between_two(above_sum[3],below_sum[3])
113
114    total_sum_pct=[total_1_pct, total_2_pct, total_3_pct, total_4_pct]
115    above_sum_pct=[above_1_pct, above_2_pct, above_3_pct, above_4_pct]
116    #above_sum_pct=[above_1_pct, below_1_pct, above_2_pct, below_2_pct]
117    below_sum_pct=[below_1_pct, below_2_pct, below_3_pct, below_4_pct]
118
119    #bbox_props = dict(boxstyle="round",pad=0.5, edgecolor="black", facecolor="lightgray")
120    for v,ax in enumerate(axes.flatten()):
121        # print(f'vline for {last_price}')
122        # ax.axvline(x=last_price,color='r',linestyle='--')
123        above_below='ABOVE' #if v<2 else 'BELOW'
124        total_text=f'TOTAL: {int(total_sum[v]):,} [{total_sum_pct[v]} %]'
125        above_text=f'{above_below}: {int(above_sum[v]):,} [{above_sum_pct[v]} %]'
126        above_below='BELOW'
127        below_text=f'{above_below}: {int(below_sum[v]):,} [{below_sum_pct[v]} %]'
128        #print(f'{above_below}: {above_below}, total_text: {total_text}, above_text: {above_text}, below_text: {below_text}')
129
130        y=-0.4 if v<2 else 1.05
131        fontsize=12
132        fc='lime' if v<2 else 'lightcoral'
133        ax.text(0.0,y, total_text, fontsize=fontsize, color='midnightblue', fontweight='bold', transform=ax.transAxes, bbox=dict(boxstyle='round', pad=0.5, facecolor='white'))
134        ax.text(0.35,y, above_text, fontsize=fontsize, color='midnightblue', fontweight='bold', transform=ax.transAxes, bbox=dict(boxstyle='round', pad=0.5, facecolor='white'))
135        ax.text(0.7,y, below_text, fontsize=fontsize, color='midnightblue', fontweight='bold', transform=ax.transAxes, bbox=dict(boxstyle='round', pad=0.5, facecolor='white'))
136        for container in ax.containers:
137            #print(f'container: {container}')
138            bar_values = [rect.get_height() for rect in container]
139            max_value=max(bar_values) #max value
140            max_index=bar_values.index(max_value) #max index
141
142            ax.bar_label(container, fmt='{:,.0f}', label_type='center', rotation=90, color='k', fontsize=10, fontweight='bold', padding=3.0)
143            #Change the color of the bar with the maximum height
144            for i, rect in enumerate(container):
145                if i == max_index:
146                    #rect.set_color('green')
147                    rect.set_edgecolor('navy')

```

```

148     rect.set_linewidth(2.0)
149
150     plt.figtext(0.99,.1,f'created on: {datetime.now(local_tz)}',transform=ax.transAxes,fontsize=8,rotation=90,fontweight='bold')
151     plt.figtext(0.5,0.5,f'{template_title.split(" ")[2]}',fontsize=150,color='gray',alpha=0.1,ha='center',va='center',rotation=30)
152     plt.tight_layout()
153     return axes
154     #plt.show()
155
156 def get_call_put_interest_plot(self,ticker,week_index,run_day,strike_range):
157     df_temp,template_title,last_price=self.get_option_info_for(ticker,exp_idx=week_index,strike_range=strike_range)
158     #tit='VOLUME AND OPEN INTEREST'
159     tit='volume and open interest'
160     ax=self.plot_columns_template(df_temp,['openInterest_call','volume_call','openInterest_put','volume_put'],layout=(2,2),tit=tit.upper(),\
161                                     last_price=last_price,template_title=template_title)
162
163     #include total value in subplots
164     for a in ax.flatten():
165         a.set_title('')
166         a.legend(loc='upper left')
167         #a.axvline(x=0,color='r',linestyle='--')
168
169     # Add custom text to each subplot
170     plt.tight_layout()
171
172
173
174     #saving into a file
175     week_index='-' .join(template_title.rstrip().split('-')[1:])
176     save_name=f'{run_day}-{ticker}-exp-{week_index}-voilo'
177     print(f'save_name: {opt_path} {save_name}')
178     #fig=ax.get_figure()
179     df_temp.to_csv(f'{opt_path}{save_name}.csv')
180
181     plt.savefig(f'{opt_path}{save_name}.pdf')
182     plt.show()
183     #plt.close()
184     return ax
185
186 def get_parameter_plot(self,symbol,par,count=10):
187     ...
188     get n largest volume of a dataframe in millions with time as index
189     ...
190     df,ind,values=self.get_option_info_for(symbol,0,20)
191
192     temp_df=df.nlargest(count,columns=par).round(2)
193
194     total_val=temp_df[par].sum()
195     print(f'total_val: {total_val}')
196     print(f'{temp_df.to_string()}')
197
198     ax=temp_df[par].plot(kind='bar',figsize=(15,6),title=f'Top {count} {par} for {symbol} for {ind}')
199     ax.set_xticklabels(temp_df.index,rotation=90);ax.set_ylabel(par)

```

```

200     for container in ax.containers:
201         ax.bar_label(container, fmt='{:,.0f}', label_type='edge', rotation=0, color='r', fontsize=8, fontweight='bold')
202     ax.set_title(ind.format(f'TOP {count} {par.upper()}'), fontsize=10, fontweight='bold')
203     plt.text(0.5, 0.5, f'Total top {count} {par}: {total_val:,}', fontsize=18, transform=ax.transAxes, bbox=dict(facecolor='black', alpha=0.75), color='white')
204     plt.tight_layout()
205     plt.savefig(f'{self.directory_path}/{symbol}_{par}.pdf')
206     plt.show()
207     return temp_df
208
209
210

1 class atr(minute_data_loader,option_data_loader):
2     html_dir='htmlplot'
3     def __init__(self,directory_path,save_dir):
4         super().__init__(directory_path,save_dir)
5         self.directory_path=directory_path
6         self.save_dir=directory_path
7
8
9
10    def get_atr_vwap(self,source_file,resample_time=5):
11        print(f'working with get_atr_vwap')
12        df_temp=pd.read_csv(f'{self.directory_path}/{source_file}')#,header=[0,1])
13        #df_temp.columns=df_temp.columns.droplevel(0) #drop level 0 column and keep level 1 only
14        #df_temp=df_temp.reset_index(drop=False)
15        #df_temp=df_temp.dropna(subset=['Datetime'])
16        print(f'column_names: {df_temp.columns}')
17        print(f'column_names: {df_temp.columns.dtype}')
18        print(f"source_file: {source_file}")
19        ticker=source_file.split('_')[0]
20        print(f'ticker: {ticker}')
21        df=df_temp.copy()
22        print(df.head().to_string())
23        df['Volume']=pd.to_numeric(df['Volume'],errors='coerce')
24
25        try:
26            df['Volume']=df['Volume']/10**6
27        except KeyError as e:
28            print(f'KeyError: {e}')
29            #df['Volume']=df['Volume']
30
31        #mapping the datetime
32        print(f'{df.head().to_string()}' )
33
34        df['Datetime']=pd.to_datetime(df['Datetime']).dt.tz_convert('US/Eastern')#.map(lambda x: x.strftime('%x-%H:%M'))
35
36        print(f'{df.head()}' )
37
38        #print(f'df:\n{df.head().to_string()}' )
39
40        #changing the resampling to 5 mins

```

```

41 r=f'{resample_time}T'
42 print(f'resampling to: {r}')
43 df=df.set_index('Datetime')
44 df=df.resample(r).agg({'Open':'first','High':'max','Low':'min','Close':'last','Volume':'sum'})
45 df=df.reset_index()
46
47 #print(f'=====')
48 df['High_low']=df['High']-df['Low']
49 df['High_close']=abs(df['High']-df['Close'].shift())
50 df['Low_close']=abs(df['Low']-df['Close'].shift())
51 df['TR']=df[['High_low','High_close','Low_close']].max(axis=1)
52 df['ATR']=df['TR'].rolling(window=5).mean()
53 df['ATR']=df['ATR'].round(2)
54
55 #vwap for a day
56 df['cumulative_volume']=df['Volume'].cumsum()
57 df['cumulative_weighted_price']=df['Close']*df['Volume']
58 df['cumulative_price']=df['cumulative_weighted_price'].cumsum()
59
60 df['vwap']=df['cumulative_price']/df['cumulative_volume']
61
62 selected_columns=['Datetime','Open','High','Low','Close','Volume','TR','ATR','vwap']
63 df=df[selected_columns]
64 df=df.round(2)
65 #print(df.head().to_string())
66 # df['ATR'].plot(kind='bar',figsize=(20,8))
67 # plt.show()
68 return df
69
70 def get_atr_for_symbol(self,symbol,resample=5):
71     #get list of
72     #df=pd.read_csv(f'{self.directory_path}/{self.minute_data}/{symbol}.csv')
73     file_list=self.list_csv_files_for_symbol(symbol)[::-1][:5]
74     print(f'file_list: {file_list}')
75     dfs=[self.get_atr_vwap(i,resample) for i in file_list]
76     merged_df=pd.concat(dfs,axis=0) #axis=0 vertical stack, axis=1 horizontal stack
77     #merged_df.reset_index(drop=True,inplace=True)
78     #merged_df.to_csv(f'{self.save_dir}/{symbol}_atr.csv',index=False)
79     print(f"merged_df: {merged_df.head()}")
80     return merged_df
81
82 def get_atr_plot(self,symbol):
83     df=self.get_atr_for_symbol(symbol)
84     grouped_df=df.groupby(df['Datetime'].dt.date)
85
86     for c, (key,group) in enumerate(grouped_df):
87         #if c!=4:continue
88         print(f'key: {key}')
89         print(group)
90         temp_df=group.copy()
91         # hour_group=temp_df.groupby(temp_df['Datetime'].dt.hour)
92         # hour_group=temp_df.groupby(pd.Grouper(freq='30T',key='Datetime'))

```

```

93
94     day=key.strftime('%A')
95     print(f'day: {day}')
96
97
98     bbox=dict(facecolor='yellow', alpha=0.5, boxstyle='round,pad=0.3')
99 #for k,(hour,hour_df) in enumerate(hour_group):
100 #if k!=0:continue
101 #print(40*'-')
102 #print(f'hour: {hour}')
103 #print(print(f'{hour_df.to_string()}'))
104 temp_df.set_index('Datetime',inplace=True)
105 temp_df.index=temp_df.index.map(lambda x: x.strftime('%H:%M'))
106
107 columns=['Open','Low','High','Close','TR','ATR','Volume','vwap']
108 temp_df=temp_df[columns]
109
110     # Create subplots: 1 row, 3 columns (since there are 3 columns to plot)
111 fig, axes = plt.subplots(3,1, figsize=(20, 20)) # (1 row, 3 columns)
112
113     # Plot TR/ATR
114 tr_mean=temp_df['TR'].mean()
115 temp_df['TR'].plot(ax=axes[0], color='blue', title='TR',kind='bar')
116 temp_df['ATR'].plot(ax=axes[0], color='red', title='ATR',kind='line')
117 axes[0].axhline(y=tr_mean, color='green', linestyle='--')
118 axes[0].text(0.5,0.5,f'mean-ATR: {tr_mean:0.2f}',transform=axes[0].transAxes,bbox=bbox)
119 axes[0].set_ylabel('TR/ATR')
120
121
122     #plot volume
123 mean_volume=temp_df['Volume'].mean()
124 temp_df['Volume'].plot(ax=axes[1], color='green', title='Volume',kind='bar')
125 axes[1].axhline(y=mean_volume, color='red', linestyle='--')
126 axes[1].text(0.5,0.5,f'mean-volume: {mean_volume:0.2f} M',transform=axes[1].transAxes,bbox=bbox)
127 axes[1].set_ylabel('Volume [M]')
128
129     #plot close
130 open_price=temp_df['Open'].iloc[0]
131 max_high=temp_df['High'].max()
132 min_low=temp_df['Low'].min()
133 close=temp_df['Close'].iloc[-1]
134 total_volume=temp_df['Volume'].sum()
135 #print(f'open: {open_price}')
136 # close=hour_df['Close'].iloc[-1]
137
138 close_string=f'''
139     open      : {open_price}
140     high     : {max_high}
141     low      : {min_low}
142     Close    : {close}
143     total volume: {total_volume} M
144

```



```

197 fig.add_trace(volume_bars, row=2, col=1)
198
199 #ATR in the third row
200 atr_bar = go.Bar(x=df['Datetime'], y=df['TR'],
201                   name='TR', marker_color='magenta')
202 fig.add_trace(atr_bar, row=3, col=1)
203
204 # atr line in the third row
205 atr_line = go.Scatter(x=df['Datetime'], y=df['ATR'], mode='lines',
206                        name='atr', line=dict(color='green'))
207 fig.add_trace(atr_line, row=3, col=1)
208
209
210 #log for volume and TR
211 #fig.update_yaxes(type='log', row=1, col=1)
212
213 fig.update_yaxes(type='log', row=2, col=1)
214 fig.update_yaxes(type='log', row=3, col=1)
215
216 # Set layout properties
217 fig.update_layout(
218     title=f'{ticker} - {date}',
219     #xaxis_title="Date",
220     yaxis_title="Price",
221     yaxis2_title="Volume",
222     xaxis_rangeslider_visible=False, # Hide the range slider
223     height=950, # Total height of the figure
224 )
225
226 # Add a fixed position annotation
227 open_price=df['Open'].iloc[0]
228 max_high=df['High'].max()
229 min_low=df['Low'].min()
230 close=df['Close'].iloc[-1]
231 total_volume=round(df['Volume'].sum(),2)
232 #print(f'open: {open_price}')
233 # close=hour_df['Close'].iloc[-1]
234
235
236 close_string=f'''
237 <b>open : {open_price}</b><br>
238 <b>high : {max_high}</b><br>
239 <b>low : {min_low}</b><br>
240 <b>Close : {close}</b><br>
241 <b>Volume : {total_volume} M</b>
242 ...
243 #print(close_string)
244
245 fig.add_annotation(
246     x=0.5, # Use a relative position (0 to 1 for x-axis)
247     y=0.9, # Use a relative position (0 to 1 for y-axis)
248     text=close_string, # The text to display

```

```

249     showarrow=False, # Show arrow pointing to the annotation
250     font=dict(size=18, color="black"),
251     xref="paper", # Use paper coordinates for x
252     yref="paper", # Use paper coordinates for y
253     # xanchor="center", # Anchor the x position
254     # yanchor="bottom" # Anchor the y position
255 )
256
257
258
259 # Show the figure
260 save_name=f"{self.directory_path}/{self.html_dir}/{ticker}-{date}.html"
261
262 print(f'saving as: {save_name}')
263
264 fig.write_html(save_name)
265 #fig.write_image('NVDA.png')
266 fig.show()

```

```

1 opt_obj=option_data_loader(directory_path)
2

```

```

1 # minute data for the following list
2 obj=minute_data_loader(directory_path,directory_path)

```

```

1
2
3 #delete the old files if want_to_remove is True
4 opt_obj.delete_old_files(directory_path, days_threshold=30, want_to_remove=True)

```

↳ Deleting files older than 30 in direcotry stock_information

```

1 #atr object
2
3 atr_obj=atr(directory_path,directory_path)

```

```

1 #remove html plot if it is higher than 10 days
2 atr_obj.delete_old_files(directory_path, 10, want_to_remove=True)

```

↳ Deleting files older than 10 in direcotry stock_information

▼ Enter the ticker of your interest here

```

1 indices=['SPY','QQQ','DIA','IWM']
2 sectors=['XLB','XLE','XLF','XLI','XLK','XLP','XLU','XLV','XLY']
3
4 stocks=['NVDA','TSLA','MSFT','META','AAPL','GOOGL','AMZN','AMD','MSTR']

```

```
5
6 #following cells is based on the items in ticker: stocks

1 downlaod_minute_data=True
2
3 if downlaod_minute_data:
4     for symbol in stocks:
5         obj.download_and_save(symbol)
```



```
2025-03-14 19:57:00+00:00 291.58 291.89 291.20 291.89 20049/  
2025-03-14 19:58:00+00:00 297.89 298.00 297.44 297.68 185598  
2025-03-14 19:59:00+00:00 297.68 297.99 297.12 297.13 425897
```

```
saving data frame as : stock_information/MSTR_2025-03-14.csv
```

```
1 for stock in stocks:atr_obj.get_plotly_plot(stock)
```

```
file_list: ['NVDA_2025-03-14.csv', 'NVDA_2025-03-13.csv', 'NVDA_2025-03-12.csv', 'NVDA_2025-03-11.csv', 'NVDA_2025-03-10.csv']
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: NVDA_2025-03-14.csv
ticker: NVDA
    Datetime      Open      High      Low     Close     Volume
0 2025-03-14 13:30:00+00:00  118.62   118.78  118.15  118.72  12914955
1 2025-03-14 13:31:00+00:00  118.70   118.95  118.33  118.92  1637098
2 2025-03-14 13:32:00+00:00  118.91   119.46  118.64  119.26  2359404
3 2025-03-14 13:33:00+00:00  119.25   119.83  119.22  119.72  2170834
4 2025-03-14 13:34:00+00:00  119.72   119.82  119.27  119.53  1656913
    Datetime      Open      High      Low     Close     Volume
0 2025-03-14 13:30:00+00:00  118.62   118.78  118.15  118.72  12.914955
1 2025-03-14 13:31:00+00:00  118.70   118.95  118.33  118.92  1.637098
2 2025-03-14 13:32:00+00:00  118.91   119.46  118.64  119.26  2.359404
3 2025-03-14 13:33:00+00:00  119.25   119.83  119.22  119.72  2.170834
4 2025-03-14 13:34:00+00:00  119.72   119.82  119.27  119.53  1.656913
    Datetime      Open      High      Low     Close     Volume
0 2025-03-14 09:30:00-04:00  118.62   118.78  118.15  118.72  12.914955
1 2025-03-14 09:31:00-04:00  118.70   118.95  118.33  118.92  1.637098
2 2025-03-14 09:32:00-04:00  118.91   119.46  118.64  119.26  2.359404
3 2025-03-14 09:33:00-04:00  119.25   119.83  119.22  119.72  2.170834
4 2025-03-14 09:34:00-04:00  119.72   119.82  119.27  119.53  1.656913
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: NVDA_2025-03-13.csv
ticker: NVDA
    Datetime      Open      High      Low     Close     Volume
0 2025-03-13 13:30:00+00:00  117.02   117.02  116.41  116.47  13827054
1 2025-03-13 13:31:00+00:00  116.48   116.99  116.32  116.35  1521249
2 2025-03-13 13:32:00+00:00  116.35   116.50  116.06  116.07  1284385
3 2025-03-13 13:33:00+00:00  116.07   116.17  115.57  115.77  1868592
4 2025-03-13 13:34:00+00:00  115.77   116.59  115.76  116.37  1634136
    Datetime      Open      High      Low     Close     Volume
0 2025-03-13 13:30:00+00:00  117.02   117.02  116.41  116.47  13.827054
1 2025-03-13 13:31:00+00:00  116.48   116.99  116.32  116.35  1.521249
2 2025-03-13 13:32:00+00:00  116.35   116.50  116.06  116.07  1.284385
3 2025-03-13 13:33:00+00:00  116.07   116.17  115.57  115.77  1.868592
4 2025-03-13 13:34:00+00:00  115.77   116.59  115.76  116.37  1.634136
    Datetime      Open      High      Low     Close     Volume
0 2025-03-13 09:30:00-04:00  117.02   117.02  116.41  116.47  13.827054
1 2025-03-13 09:31:00-04:00  116.48   116.99  116.32  116.35  1.521249
2 2025-03-13 09:32:00-04:00  116.35   116.50  116.06  116.07  1.284385
3 2025-03-13 09:33:00-04:00  116.07   116.17  115.57  115.77  1.868592
4 2025-03-13 09:34:00-04:00  115.77   116.59  115.76  116.37  1.634136
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: NVDA_2025-03-12.csv
ticker: NVDA
    Datetime      Open      High      Low     Close     Volume
0 2025-03-12 13:30:00+00:00  114.12   114.75  113.92  114.71  20420130
1 2025-03-12 13:31:00+00:00  114.72   114.80  114.15  114.68  2573364
2 2025-03-12 13:32:00+00:00  114.62   114.72  114.03  114.71  2187925
3 2025-03-12 13:33:00+00:00  114.71   115.20  114.48  115.00  3191106
4 2025-03-12 13:34:00+00:00  115.00   115.63  114.96  115.12  2526740
    Datetime      Open      High      Low     Close     Volume
0 2025-03-12 13:30:00+00:00  114.12   114.75  113.92  114.71  20.420130
1 2025-03-12 13:31:00+00:00  114.72   114.80  114.15  114.68  2.573364
2 2025-03-12 13:32:00+00:00  114.62   114.72  114.03  114.71  2.187925
```

```

4 2025-03-12 13:33:00+00:00 114.71 115.20 114.48 115.00 3.191106
3 2025-03-12 13:34:00+00:00 115.00 115.63 114.96 115.12 2.526740
   Datetime    Open    High     Low    Close   Volume
0 2025-03-12 09:30:00-04:00 114.12 114.75 113.92 114.71 20.420130
1 2025-03-12 09:31:00-04:00 114.72 114.80 114.15 114.68 2.573364
2 2025-03-12 09:32:00-04:00 114.62 114.72 114.03 114.71 2.187925
3 2025-03-12 09:33:00-04:00 114.71 115.20 114.48 115.00 3.191106
4 2025-03-12 09:34:00-04:00 115.00 115.63 114.96 115.12 2.526740
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: NVDA_2025-03-11.csv
ticker: NVDA
   Datetime    Open    High     Low    Close   Volume
0 2025-03-11 13:30:00+00:00 107.00 107.06 106.22 106.64 14477765
1 2025-03-11 13:31:00+00:00 106.64 107.57 106.49 107.41 1649735
2 2025-03-11 13:32:00+00:00 107.42 107.82 107.00 107.41 1530254
3 2025-03-11 13:33:00+00:00 107.45 107.88 107.16 107.83 1.662919
4 2025-03-11 13:34:00+00:00 107.82 108.00 107.59 107.70 1.391979
   Datetime    Open    High     Low    Close   Volume
0 2025-03-11 13:30:00+00:00 107.00 107.06 106.22 106.64 14.477765
1 2025-03-11 13:31:00+00:00 106.64 107.57 106.49 107.41 1.649735
2 2025-03-11 13:32:00+00:00 107.42 107.82 107.00 107.41 1.530254
3 2025-03-11 13:33:00+00:00 107.45 107.88 107.16 107.83 1.662919
4 2025-03-11 13:34:00+00:00 107.82 108.00 107.59 107.70 1.391979
   Datetime    Open    High     Low    Close   Volume
0 2025-03-11 09:30:00-04:00 107.00 107.06 106.22 106.64 14.477765
1 2025-03-11 09:31:00-04:00 106.64 107.57 106.49 107.41 1.649735
2 2025-03-11 09:32:00-04:00 107.42 107.82 107.00 107.41 1.530254
3 2025-03-11 09:33:00-04:00 107.45 107.88 107.16 107.83 1.662919
4 2025-03-11 09:34:00-04:00 107.82 108.00 107.59 107.70 1.391979
resampling to: 1T
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning: 'T' is deprecated and will be removed in a future version, please use 'min' instead.
df=df.resample(r).agg({'Open':'first','High':'max','Low':'min','Close':'last','Volume':'sum'})
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning: 'T' is deprecated and will be removed in a future version, please use 'min' instead.
df=df.resample(r).agg({'Open':'first','High':'max','Low':'min','Close':'last','Volume':'sum'})
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning: 'T' is deprecated and will be removed in a future version, please use 'min' instead.
df=df.resample(r).agg({'Open':'first','High':'max','Low':'min','Close':'last','Volume':'sum'})
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning: 'T' is deprecated and will be removed in a future version, please use 'min' instead.
df=df.resample(r).agg({'Open':'first','High':'max','Low':'min','Close':'last','Volume':'sum'})
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: NVDA_2025-03-10.csv
ticker: NVDA
   Datetime    Open    High     Low    Close   Volume
0 2025-03-10 13:30:00+00:00 110.35 110.35 110.35 110.35 13116035
1 2025-03-10 13:31:00+00:00 110.35 110.67 109.97 110.22 1484069
2 2025-03-10 13:32:00+00:00 110.24 110.41 109.80 109.99 1455370
3 2025-03-10 13:33:00+00:00 110.04 110.07 109.32 109.48 1263644
4 2025-03-10 13:34:00+00:00 109.48 109.99 109.24 109.93 1125918
   Datetime    Open    High     Low    Close   Volume
0 2025-03-10 13:30:00+00:00 110.35 110.35 110.35 110.35 13.116035
1 2025-03-10 13:31:00+00:00 110.35 110.67 109.97 110.22 1.484069
2 2025-03-10 13:32:00+00:00 110.24 110.41 109.80 109.99 1.455370
3 2025-03-10 13:33:00+00:00 110.04 110.07 109.32 109.48 1.263644
4 2025-03-10 13:34:00+00:00 109.48 109.99 109.24 109.93 1.125918
   Datetime    Open    High     Low    Close   Volume
0 2025-03-10 09:30:00-04:00 110.35 110.35 110.35 110.35 13.116035
1 2025-03-10 09:31:00-04:00 110.35 110.67 109.97 110.22 1.484069
2 2025-03-10 09:32:00-04:00 110.24 110.41 109.80 109.99 1.455370
3 2025-03-10 09:33:00-04:00 110.04 110.07 109.32 109.48 1.263644
4 2025-03-10 09:34:00-04:00 109.48 109.99 109.24 109.93 1.125918

```

7

2025-03-14 09:30:00-04:00 109.70 109.00 108.24 108.00 +142000

resampling to: 1T

merged_df: Datetime Open High Low Close Volume TR \

0	2025-03-14 09:30:00-04:00	118.62	118.78	118.15	118.72	12.91	0.63
1	2025-03-14 09:31:00-04:00	118.70	118.95	118.33	118.92	1.64	0.62
2	2025-03-14 09:32:00-04:00	118.91	119.46	118.64	119.26	2.36	0.82
3	2025-03-14 09:33:00-04:00	119.25	119.83	119.22	119.72	2.17	0.61
4	2025-03-14 09:34:00-04:00	119.72	119.82	119.27	119.53	1.66	0.55

ATR vwap

0	NaN	118.72
1	NaN	118.74
2	NaN	118.81
3	NaN	118.92
4	0.65	118.97

2025-03-10

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-10 09:30:00-04:00	110.35	110.35	110.35	110.35	13.12	0.00	NaN	110.35
1	2025-03-10 09:31:00-04:00	110.35	110.67	109.97	110.22	1.48	0.70	NaN	110.34
2	2025-03-10 09:32:00-04:00	110.24	110.41	109.80	109.99	1.46	0.61	NaN	110.31
3	2025-03-10 09:33:00-04:00	110.04	110.07	109.32	109.48	1.26	0.75	NaN	110.25
4	2025-03-10 09:34:00-04:00	109.48	109.99	109.24	109.93	1.13	0.75	0.56	110.23

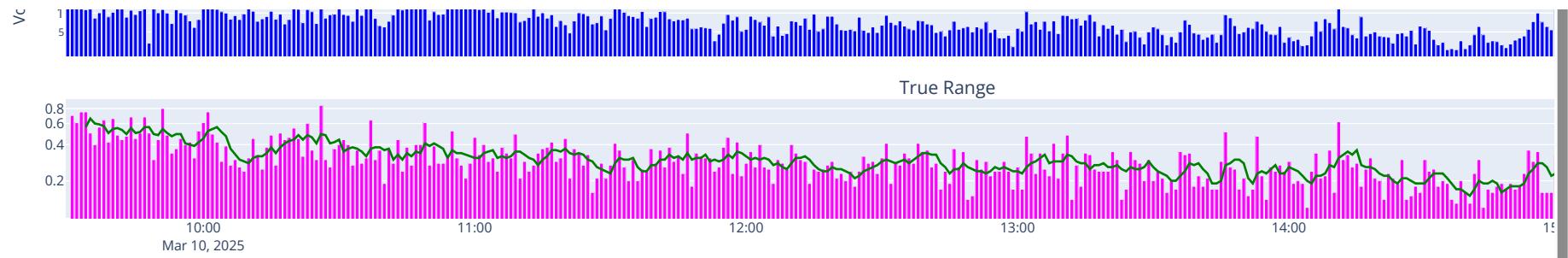
<ipython-input-11-8a5c6a9f0a6>:44: FutureWarning: 'T' is deprecated and will be removed in a future version, please use 'min' instead.

df=df.resample(r).agg({'Open':'first','High':'max','Low':'min','Close':'last','Volume':'sum'})

saving as: stock_information/htmlplot/NVDA-2025-03-10.html

NVDA - 2025-03-10





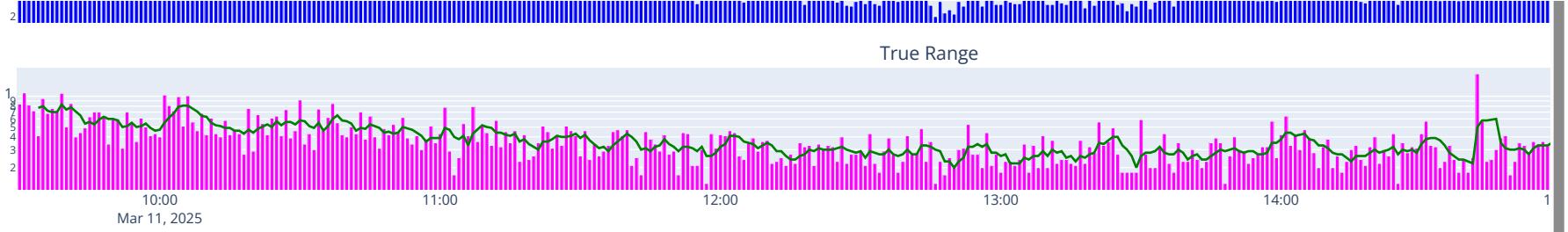
2025-03-11

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	107.00	107.06	106.22	106.64	14.48	0.84	NaN	106.64
1	2025-03-11 09:31:00-04:00	106.64	107.57	106.49	107.41	1.65	1.08	NaN	106.72
2	2025-03-11 09:32:00-04:00	107.42	107.82	107.00	107.41	1.53	0.82	NaN	106.78
3	2025-03-11 09:33:00-04:00	107.45	107.88	107.16	107.83	1.66	0.72	NaN	106.87
4	2025-03-11 09:34:00-04:00	107.82	108.00	107.59	107.70	1.39	0.41	0.77	106.92

saving as: stock_information/htmlplot/NVDA-2025-03-11.html

NVDA - 2025-03-11





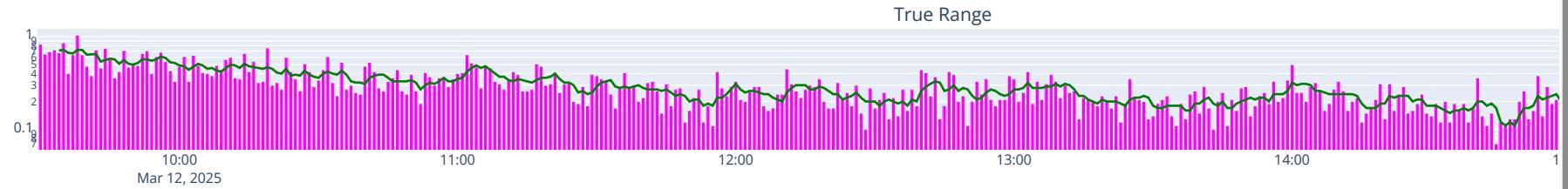
2025-03-12

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-12 09:30:00-04:00	114.12	114.75	113.92	114.71	20.42	0.83	NaN	114.71
1	2025-03-12 09:31:00-04:00	114.72	114.80	114.15	114.68	2.57	0.65	NaN	114.71
2	2025-03-12 09:32:00-04:00	114.62	114.72	114.03	114.71	2.19	0.69	NaN	114.71
3	2025-03-12 09:33:00-04:00	114.71	115.20	114.48	115.00	3.19	0.72	NaN	114.74
4	2025-03-12 09:34:00-04:00	115.00	115.63	114.96	115.12	2.53	0.67	0.71	114.77

saving as: stock_information/htmlplot/NVDA-2025-03-12.html

NVDA - 2025-03-12





2025-03-13

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	117.02	117.02	116.41	116.47	13.83	0.61	NaN	116.47
1	2025-03-13 09:31:00-04:00	116.48	116.99	116.32	116.35	1.52	0.67	NaN	116.46
2	2025-03-13 09:32:00-04:00	116.35	116.50	116.06	116.07	1.28	0.44	NaN	116.43
3	2025-03-13 09:33:00-04:00	116.07	116.17	115.57	115.77	1.87	0.60	NaN	116.36
4	2025-03-13 09:34:00-04:00	115.77	116.59	115.76	116.37	1.63	0.83	0.63	116.36

saving as: stock_information/htmlplot/NVDA-2025-03-13.html

NVDA - 2025-03-13





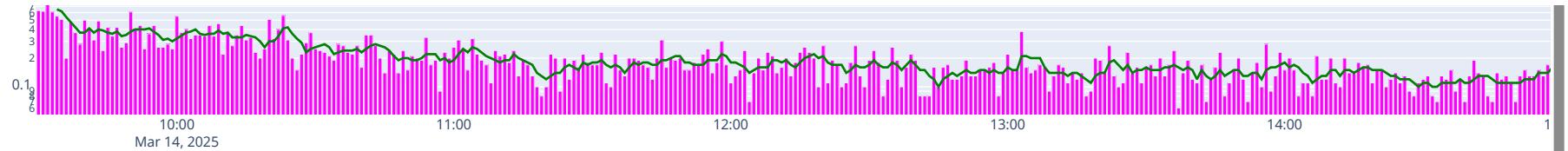
2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	118.62	118.78	118.15	118.72	12.91	0.63	NaN	118.72
1	2025-03-14 09:31:00-04:00	118.70	118.95	118.33	118.92	1.64	0.62	NaN	118.74
2	2025-03-14 09:32:00-04:00	118.91	119.46	118.64	119.26	2.36	0.82	NaN	118.81
3	2025-03-14 09:33:00-04:00	119.25	119.83	119.22	119.72	2.17	0.61	NaN	118.92
4	2025-03-14 09:34:00-04:00	119.72	119.82	119.27	119.53	1.66	0.55	0.65	118.97

saving as: stock_information/htmlplot/NVDA-2025-03-14.html

NVDA - 2025-03-14





```
file_list: ['TSLA_2025-03-14.csv', 'TSLA_2025-03-13.csv', 'TSLA_2025-03-12.csv', 'TSLA_2025-03-11.csv', 'TSLA_2025-03-10.csv']
```

```
working with get_atr_vwap
```

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
```

```
source_file: TSLA_2025-03-14.csv
```

```
ticker: TSLA
```

```
    Datetime   Open   High   Low   Close   Volume
```

```
0 2025-03-14 13:30:00+00:00 247.31 247.88 246.11 246.99 4449406
```

```
1 2025-03-14 13:31:00+00:00 246.96 249.15 246.72 248.40 914328
```

```
2 2025-03-14 13:32:00+00:00 248.39 249.54 247.66 247.66 681503
```

```
3 2025-03-14 13:33:00+00:00 247.76 249.30 247.21 249.11 567805
```

```
4 2025-03-14 13:34:00+00:00 249.04 249.33 248.21 248.73 444715
```

```
    Datetime   Open   High   Low   Close   Volume
```

```
0 2025-03-14 13:30:00+00:00 247.31 247.88 246.11 246.99 4.449406
```

```
1 2025-03-14 13:31:00+00:00 246.96 249.15 246.72 248.40 0.914328
```

```
2 2025-03-14 13:32:00+00:00 248.39 249.54 247.66 247.66 0.681503
```

```
3 2025-03-14 13:33:00+00:00 247.76 249.30 247.21 249.11 0.567805
```

```
4 2025-03-14 13:34:00+00:00 249.04 249.33 248.21 248.73 0.444715
```

```
    Datetime   Open   High   Low   Close   Volume
```

```
0 2025-03-14 09:30:00-04:00 247.31 247.88 246.11 246.99 4.449406
```

```
1 2025-03-14 09:31:00-04:00 246.96 249.15 246.72 248.40 0.914328
```

```
2 2025-03-14 09:32:00-04:00 248.39 249.54 247.66 247.66 0.681503
```

```
3 2025-03-14 09:33:00-04:00 247.76 249.30 247.21 249.11 0.567805
```

```
4 2025-03-14 09:34:00-04:00 249.04 249.33 248.21 248.73 0.444715
```

```
resampling to: 1T
```

```
working with get_atr_vwap
```

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
```

```
source_file: TSLA_2025-03-13.csv
```

```
ticker: TSLA
```

```
    Datetime   Open   High   Low   Close   Volume
```

```
0 2025-03-13 13:30:00+00:00 248.12 248.29 245.12 245.82 7190091
```

```
1 2025-03-13 13:31:00+00:00 245.79 246.25 244.10 244.93 869249
```

```
2 2025-03-13 13:32:00+00:00 244.85 245.80 244.09 244.60 754477
```

```
3 2025-03-13 13:33:00+00:00 244.62 245.08 243.57 243.57 675276
```

```
4 2025-03-13 13:34:00+00:00 243.59 245.04 243.53 244.44 532778
```

```
    Datetime   Open   High   Low   Close   Volume
```

```
0 2025-03-13 13:30:00+00:00 248.12 248.29 245.12 245.82 7.190091
```

```
1 2025-03-13 13:31:00+00:00 245.79 246.25 244.10 244.93 0.869249
```

```
2 2025-03-13 13:32:00+00:00 244.85 245.80 244.09 244.60 0.754477
```

```
3 2025-03-13 13:33:00+00:00 244.62 245.08 243.57 243.57 0.675276
```

```
4 2025-03-13 13:34:00+00:00 243.59 245.04 243.53 244.44 0.532778
```

```
    Datetime   Open   High   Low   Close   Volume
```

```
0 2025-03-13 09:30:00-04:00 248.12 248.29 245.12 245.82 7.190091
```

```
1 2025-03-13 09:31:00-04:00 245.79 246.25 244.10 244.93 0.869249
```

```
2 2025-03-13 09:32:00-04:00 244.85 245.80 244.09 244.60 0.754477
```

```
3 2025-03-13 09:33:00-04:00 244.62 245.08 243.57 243.57 0.675276
```

```
4 2025-03-13 09:34:00-04:00 243.59 245.04 243.53 244.44 0.532778
```

```
resampling to: 1T
```

```
working with get_atr_vwap
```

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
```

```
source_file: TSLA_2025-03-12.csv
```

```
ticker: TSLA
```

```

          Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00  244.65 244.74 244.60 244.60 13416599
1 2025-03-12 13:31:00+00:00  244.60 248.33 244.30 245.27 1807987
2 2025-03-12 13:32:00+00:00  245.29 247.41 244.64 245.85 1080351
3 2025-03-12 13:33:00+00:00  245.70 247.80 245.58 247.27 874369
4 2025-03-12 13:34:00+00:00  247.22 248.48 245.95 246.82 1236853
          Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00  244.65 244.74 244.60 244.60 13.416599
1 2025-03-12 13:31:00+00:00  244.60 248.33 244.30 245.27 1.807987
2 2025-03-12 13:32:00+00:00  245.29 247.41 244.64 245.85 1.080351
3 2025-03-12 13:33:00+00:00  245.70 247.80 245.58 247.27 0.874369
4 2025-03-12 13:34:00+00:00  247.22 248.48 245.95 246.82 1.236853
          Datetime   Open   High   Low  Close  Volume
0 2025-03-12 09:30:00-04:00  244.65 244.74 244.60 244.60 13.416599
1 2025-03-12 09:31:00-04:00  244.60 248.33 244.30 245.27 1.807987
2 2025-03-12 09:32:00-04:00  245.29 247.41 244.64 245.85 1.080351
3 2025-03-12 09:33:00-04:00  245.70 247.80 245.58 247.27 0.874369
4 2025-03-12 09:34:00-04:00  247.22 248.48 245.95 246.82 1.236853
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: TSLA_2025-03-11.csv
ticker: TSLA
          Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00  225.27 225.87 224.02 224.77 14429333
1 2025-03-11 13:31:00+00:00  224.89 226.00 224.13 225.54 990650
2 2025-03-11 13:32:00+00:00  225.46 225.69 222.10 222.36 1286752
3 2025-03-11 13:33:00+00:00  222.47 223.60 222.00 223.52 889490
4 2025-03-11 13:34:00+00:00  223.45 225.16 222.93 224.68 919538
          Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00  225.27 225.87 224.02 224.77 14.429333
1 2025-03-11 13:31:00+00:00  224.89 226.00 224.13 225.54 0.990650
2 2025-03-11 13:32:00+00:00  225.46 225.69 222.10 222.36 1.286752
3 2025-03-11 13:33:00+00:00  222.47 223.60 222.00 223.52 0.889490
4 2025-03-11 13:34:00+00:00  223.45 225.16 222.93 224.68 0.919538
          Datetime   Open   High   Low  Close  Volume
0 2025-03-11 09:30:00-04:00  225.27 225.87 224.02 224.77 14.429333
1 2025-03-11 09:31:00-04:00  224.89 226.00 224.13 225.54 0.990650
2 2025-03-11 09:32:00-04:00  225.46 225.69 222.10 222.36 1.286752
3 2025-03-11 09:33:00-04:00  222.47 223.60 222.00 223.52 0.889490
4 2025-03-11 09:34:00-04:00  223.45 225.16 222.93 224.68 0.919538
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: TSLA_2025-03-10.csv
ticker: TSLA
          Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00  252.60 253.37 251.57 253.15 5333049
1 2025-03-10 13:31:00+00:00  253.16 253.31 250.55 250.55 1012935
2 2025-03-10 13:32:00+00:00  250.59 250.84 248.11 248.70 1968735
3 2025-03-10 13:33:00+00:00  248.63 248.95 247.66 247.89 814478
4 2025-03-10 13:34:00+00:00  247.80 248.74 247.14 247.73 826610
          Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00  252.60 253.37 251.57 253.15 5.333049
1 2025-03-10 13:31:00+00:00  253.16 253.31 250.55 250.55 1.012935
2 2025-03-10 13:32:00+00:00  250.59 250.84 248.11 248.70 1.968735
3 2025-03-10 13:33:00+00:00  248.63 248.95 247.66 247.89 0.814478
4 2025-03-10 13:34:00+00:00  247.80 248.74 247.14 247.73 0.826610
          Datetime   Open   High   Low  Close  Volume
0 2025-03-10 09:30:00-04:00  252.60 253.37 251.57 253.15 5.333049
1 2025-03-10 09:31:00-04:00  253.16 253.31 250.55 250.55 1.012935
2 2025-03-10 09:32:00-04:00  250.59 250.84 248.11 248.70 1.968735

```

```

3 2025-03-10 09:33:00-04:00 248.63 248.95 247.66 247.89 0.814478
4 2025-03-10 09:34:00-04:00 247.80 248.74 247.14 247.73 0.826610
resampling to: 1T
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

merged_df:
          Datetime   Open   High    Low  Close  Volume   TR \
0 2025-03-14 09:30:00-04:00 247.31 247.88 246.11 246.99  4.45  1.77
1 2025-03-14 09:31:00-04:00 246.96 249.15 246.72 248.40  0.91  2.43
2 2025-03-14 09:32:00-04:00 248.39 249.54 247.66 247.66  0.68  1.88
3 2025-03-14 09:33:00-04:00 247.76 249.30 247.21 249.11  0.57  2.09
4 2025-03-14 09:34:00-04:00 249.04 249.33 248.21 248.73  0.44  1.12

      ATR      vwap
0  NaN  246.99
1  NaN  247.23
2  NaN  247.28
3  NaN  247.44
4  1.86 247.52
2025-03-10
          Datetime   Open   High    Low  Close  Volume   TR      ATR      vwap
0 2025-03-10 09:30:00-04:00 252.60 253.37 251.57 253.15  5.33  1.80  NaN  253.15
1 2025-03-10 09:31:00-04:00 253.16 253.31 250.55 250.55  1.01  2.76  NaN  252.73
2 2025-03-10 09:32:00-04:00 250.59 250.84 248.11 248.70  1.97  2.73  NaN  251.78
3 2025-03-10 09:33:00-04:00 248.63 248.95 247.66 247.89  0.81  1.29  NaN  251.43
4 2025-03-10 09:34:00-04:00 247.80 248.74 247.14 247.73  0.83  1.60  2.04  251.13
saving as: stock_information/htmlplot/TSLA-2025-03-10.html

```

TSLA - 2025-03-10





2025-03-11

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	225.27	225.87	224.02	224.77	14.43	1.85	NaN	224.77
1	2025-03-11 09:31:00-04:00	224.89	226.00	224.13	225.54	0.99	1.87	NaN	224.82
2	2025-03-11 09:32:00-04:00	225.46	225.69	222.10	222.36	1.29	3.59	NaN	224.63
3	2025-03-11 09:33:00-04:00	222.47	223.60	222.00	223.52	0.89	1.60	NaN	224.57
4	2025-03-11 09:34:00-04:00	223.45	225.16	222.93	224.68	0.92	2.23	2.23	224.58

saving as: stock_information/htmlplot/TSLA-2025-03-11.html

TSLA - 2025-03-11





2025-03-12

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-12 09:30:00-04:00	244.65	244.74	244.60	244.60	13.42	0.14	NaN	244.60
1	2025-03-12 09:31:00-04:00	244.60	248.33	244.30	245.27	1.81	4.03	NaN	244.68
2	2025-03-12 09:32:00-04:00	245.29	247.41	244.64	245.85	1.08	2.77	NaN	244.76
3	2025-03-12 09:33:00-04:00	245.70	247.80	245.58	247.27	0.87	2.22	NaN	244.89
4	2025-03-12 09:34:00-04:00	247.22	248.48	245.95	246.82	1.24	2.53	2.34	245.01

saving as: stock_information/htmlplot/TSLA-2025-03-12.html

TSLA - 2025-03-12



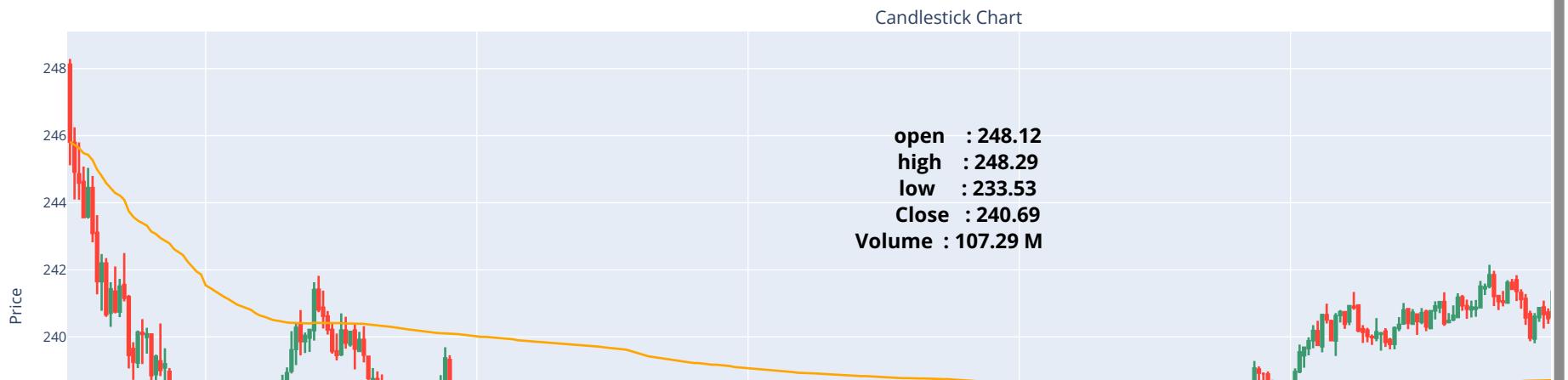


2025-03-13

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	248.12	248.29	245.12	245.82	7.19	3.17	NaN	245.82
1	2025-03-13 09:31:00-04:00	245.79	246.25	244.10	244.93	0.87	2.15	NaN	245.72
2	2025-03-13 09:32:00-04:00	244.85	245.80	244.09	244.60	0.75	1.71	NaN	245.63
3	2025-03-13 09:33:00-04:00	244.62	245.08	243.57	243.57	0.68	1.51	NaN	245.48
4	2025-03-13 09:34:00-04:00	243.59	245.04	243.53	244.44	0.53	1.51	2.01	245.43

saving as: stock_information/htmlplot/TSLA-2025-03-13.html

TSLA - 2025-03-13





2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	247.31	247.88	246.11	246.99	4.45	1.77	NaN	246.99
1	2025-03-14 09:31:00-04:00	246.96	249.15	246.72	248.40	0.91	2.43	NaN	247.23
2	2025-03-14 09:32:00-04:00	248.39	249.54	247.66	247.66	0.68	1.88	NaN	247.28
3	2025-03-14 09:33:00-04:00	247.76	249.30	247.21	249.11	0.57	2.09	NaN	247.44
4	2025-03-14 09:34:00-04:00	249.04	249.33	248.21	248.73	0.44	1.12	1.86	247.52

saving as: stock_information/htmlplot/TSLA-2025-03-14.html

TSLA - 2025-03-14





```
file_list: ['MSFT_2025-03-14.csv', 'MSFT_2025-03-13.csv', 'MSFT_2025-03-12.csv', 'MSFT_2025-03-11.csv', 'MSFT_2025-03-10.csv']
```

```
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: MSFT_2025-03-14.csv
ticker: MSFT
```

```
Datetime      Open      High      Low      Close     Volume
```

0	2025-03-14 13:30:00+00:00	381.04	381.57	379.51	381.04	877470
1	2025-03-14 13:31:00+00:00	380.97	381.80	380.85	380.98	113092
2	2025-03-14 13:32:00+00:00	381.05	381.80	380.83	381.49	81654
3	2025-03-14 13:33:00+00:00	381.55	382.64	381.44	382.47	122978
4	2025-03-14 13:34:00+00:00	382.40	382.80	382.14	382.43	79213

```
Datetime      Open      High      Low      Close     Volume
```

0	2025-03-14 13:30:00+00:00	381.04	381.57	379.51	381.04	0.877470
1	2025-03-14 13:31:00+00:00	380.97	381.80	380.85	380.98	0.113092
2	2025-03-14 13:32:00+00:00	381.05	381.80	380.83	381.49	0.081654
3	2025-03-14 13:33:00+00:00	381.55	382.64	381.44	382.47	0.122978
4	2025-03-14 13:34:00+00:00	382.40	382.80	382.14	382.43	0.079213

```
Datetime      Open      High      Low      Close     Volume
```

0	2025-03-14 09:30:00-04:00	381.04	381.57	379.51	381.04	0.877470
1	2025-03-14 09:31:00-04:00	380.97	381.80	380.85	380.98	0.113092
2	2025-03-14 09:32:00-04:00	381.05	381.80	380.83	381.49	0.081654
3	2025-03-14 09:33:00-04:00	381.55	382.64	381.44	382.47	0.122978
4	2025-03-14 09:34:00-04:00	382.40	382.80	382.14	382.43	0.079213

```
resampling to: 1T
```

```
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
source_file: MSFT_2025-03-13.csv
ticker: MSFT
```

```
Datetime      Open      High      Low      Close     Volume
```

0	2025-03-13 13:30:00+00:00	383.15	384.00	382.59	384.00	929290
1	2025-03-13 13:31:00+00:00	384.06	385.25	383.92	384.53	131851
2	2025-03-13 13:32:00+00:00	384.71	385.31	384.71	384.90	78990

```
3 2025-03-13 13:33:00+00:00 384.93 385.03 384.03 384.06 /1483
4 2025-03-13 13:34:00+00:00 383.97 384.64 383.89 384.55 85638
    Datetime   Open   High   Low  Close  Volume
0 2025-03-13 13:30:00+00:00 383.15 384.00 382.59 384.00 0.929290
1 2025-03-13 13:31:00+00:00 384.06 385.25 383.92 384.53 0.131851
2 2025-03-13 13:32:00+00:00 384.71 385.31 384.71 384.90 0.078990
3 2025-03-13 13:33:00+00:00 384.93 385.03 384.03 384.06 0.071483
4 2025-03-13 13:34:00+00:00 383.97 384.64 383.89 384.55 0.085638
    Datetime   Open   High   Low  Close  Volume
0 2025-03-13 09:30:00-04:00 383.15 384.00 382.59 384.00 0.929290
1 2025-03-13 09:31:00-04:00 384.06 385.25 383.92 384.53 0.131851
2 2025-03-13 09:32:00-04:00 384.71 385.31 384.71 384.90 0.078990
3 2025-03-13 09:33:00-04:00 384.93 385.03 384.03 384.06 0.071483
4 2025-03-13 09:34:00-04:00 383.97 384.64 383.89 384.55 0.085638
```

resampling to: 1T

working with get_atr_vwap

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
```

```
source_file: MSFT_2025-03-12.csv
```

```
ticker: MSFT
```

```
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00 382.85 383.00 381.90 382.18 830843
1 2025-03-12 13:31:00+00:00 382.14 383.16 381.62 382.85 147570
2 2025-03-12 13:32:00+00:00 382.96 383.96 382.64 383.51 150962
3 2025-03-12 13:33:00+00:00 383.46 384.68 383.30 384.18 119530
4 2025-03-12 13:34:00+00:00 384.24 384.84 384.00 384.04 113770
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00 382.85 383.00 381.90 382.18 0.830843
1 2025-03-12 13:31:00+00:00 382.14 383.16 381.62 382.85 0.147570
2 2025-03-12 13:32:00+00:00 382.96 383.96 382.64 383.51 0.150962
3 2025-03-12 13:33:00+00:00 383.46 384.68 383.30 384.18 0.119530
4 2025-03-12 13:34:00+00:00 384.24 384.84 384.00 384.04 0.113770
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 09:30:00-04:00 382.85 383.00 381.90 382.18 0.830843
1 2025-03-12 09:31:00-04:00 382.14 383.16 381.62 382.85 0.147570
2 2025-03-12 09:32:00-04:00 382.96 383.96 382.64 383.51 0.150962
3 2025-03-12 09:33:00-04:00 383.46 384.68 383.30 384.18 0.119530
4 2025-03-12 09:34:00-04:00 384.24 384.84 384.00 384.04 0.113770
```

resampling to: 1T

working with get_atr_vwap

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
```

```
source_file: MSFT_2025-03-11.csv
```

```
ticker: MSFT
```

```
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 379.00 381.16 378.65 380.26 1078483
1 2025-03-11 13:31:00+00:00 380.48 381.01 380.40 380.68 83006
2 2025-03-11 13:32:00+00:00 380.58 380.74 380.04 380.24 63881
3 2025-03-11 13:33:00+00:00 380.24 380.99 379.92 380.92 69914
4 2025-03-11 13:34:00+00:00 380.99 381.00 380.13 380.38 75059
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 379.00 381.16 378.65 380.26 1.078483
1 2025-03-11 13:31:00+00:00 380.48 381.01 380.40 380.68 0.083006
2 2025-03-11 13:32:00+00:00 380.58 380.74 380.04 380.24 0.063881
3 2025-03-11 13:33:00+00:00 380.24 380.99 379.92 380.92 0.069914
4 2025-03-11 13:34:00+00:00 380.99 381.00 380.13 380.38 0.075059
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 09:30:00-04:00 379.00 381.16 378.65 380.26 1.078483
1 2025-03-11 09:31:00-04:00 380.48 381.01 380.40 380.68 0.083006
2 2025-03-11 09:32:00-04:00 380.58 380.74 380.04 380.24 0.063881
3 2025-03-11 09:33:00-04:00 380.24 380.99 379.92 380.92 0.069914
4 2025-03-11 09:34:00-04:00 380.99 381.00 380.13 380.38 0.075059
```

resampling to: 1T

working with get_atr_vwap

```

column_names: index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: MSFT_2025-03-10.csv
ticker: MSFT

      Datetime   Open   High    Low   Close  Volume
0 2025-03-10 13:30:00+00:00  384.16  384.16  384.14  384.14  896308
1 2025-03-10 13:31:00+00:00  384.13  385.95  383.56  385.45  143164
2 2025-03-10 13:32:00+00:00  385.47  385.52  384.06  384.90  89047
3 2025-03-10 13:33:00+00:00  384.95  385.50  384.71  384.92  86796
4 2025-03-10 13:34:00+00:00  385.00  385.28  384.17  384.50  97722
      Datetime   Open   High    Low   Close  Volume
0 2025-03-10 13:30:00+00:00  384.16  384.16  384.14  384.14  0.896308
1 2025-03-10 13:31:00+00:00  384.13  385.95  383.56  385.45  0.143164
2 2025-03-10 13:32:00+00:00  385.47  385.52  384.06  384.90  0.089047
3 2025-03-10 13:33:00+00:00  384.95  385.50  384.71  384.92  0.086796
4 2025-03-10 13:34:00+00:00  385.00  385.28  384.17  384.50  0.097722
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

'T' is deprecated and will be removed in a future version, please use 'min' instead.

      Datetime   Open   High    Low   Close  Volume
0 2025-03-10 09:30:00-04:00  384.16  384.16  384.14  384.14  0.896308
1 2025-03-10 09:31:00-04:00  384.13  385.95  383.56  385.45  0.143164
2 2025-03-10 09:32:00-04:00  385.47  385.52  384.06  384.90  0.089047
3 2025-03-10 09:33:00-04:00  384.95  385.50  384.71  384.92  0.086796
4 2025-03-10 09:34:00-04:00  385.00  385.28  384.17  384.50  0.097722
resampling to: 1T
merged_df:
      Datetime   Open   High    Low   Close  Volume    TR \
0 2025-03-14 09:30:00-04:00  381.04  381.57  379.51  381.04   0.88  2.06
1 2025-03-14 09:31:00-04:00  380.97  381.80  380.85  380.98   0.11  0.95
2 2025-03-14 09:32:00-04:00  381.05  381.80  380.83  381.49   0.08  0.97
3 2025-03-14 09:33:00-04:00  381.55  382.64  381.44  382.47   0.12  1.20
4 2025-03-14 09:34:00-04:00  382.40  382.80  382.14  382.43   0.08  0.66

      ATR     vwap
0  NaN  381.04
1  NaN  381.03
2  NaN  381.07
3  NaN  381.21
4  1.17  381.29
2025-03-10
      Datetime   Open   High    Low   Close  Volume    TR   ATR     vwap
0 2025-03-10 09:30:00-04:00  384.16  384.16  384.14  384.14   0.90  0.02  NaN  384.14
1 2025-03-10 09:31:00-04:00  384.13  385.95  383.56  385.45   0.14  2.39  NaN  384.32
2 2025-03-10 09:32:00-04:00  385.47  385.52  384.06  384.90   0.09  1.46  NaN  384.37
3 2025-03-10 09:33:00-04:00  384.95  385.50  384.71  384.92   0.09  0.79  NaN  384.41
4 2025-03-10 09:34:00-04:00  385.00  385.28  384.17  384.50   0.10  1.11  1.15  384.41
saving as: stock_information/htmlplot/MSFT-2025-03-10.html

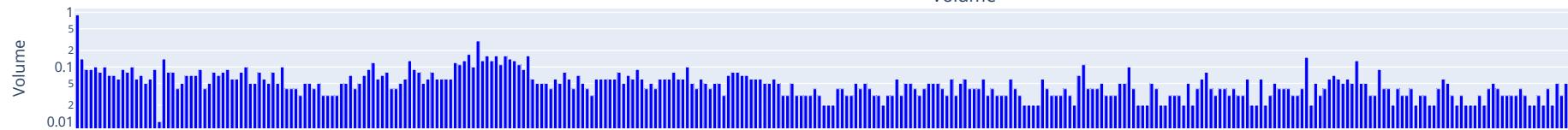
```

MSFT - 2025-03-10

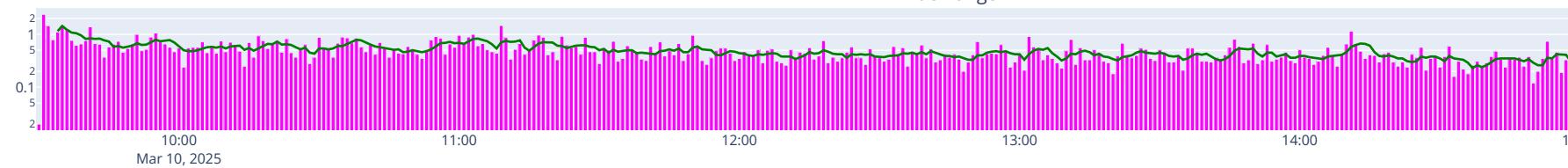
Candlestick Chart



Volume



True Range



Mar 10, 2025

2025-03-11

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	379.00	381.16	378.65	380.26	1.08	2.51	NaN	380.26
1	2025-03-11 09:31:00-04:00	380.48	381.01	380.40	380.68	0.08	0.75	NaN	380.29
2	2025-03-11 09:32:00-04:00	380.58	380.74	380.04	380.24	0.06	0.70	NaN	380.29
3	2025-03-11 09:33:00-04:00	380.24	380.99	379.92	380.92	0.07	1.07	NaN	380.32
4	2025-03-11 09:34:00-04:00	380.99	381.00	380.13	380.38	0.08	0.87	1.18	380.32

saving as: stock_information/htmlplot/MSFT-2025-03-11.html

MSFT - 2025-03-11



2025-03-12

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-12 09:30:00-04:00	382.85	383.00	381.90	382.18	0.83	1.10	NaN	382.18
1	2025-03-12 09:31:00-04:00	382.14	383.16	381.62	382.85	0.15	1.54	NaN	382.28
2	2025-03-12 09:32:00-04:00	382.96	383.96	382.64	383.51	0.15	1.32	NaN	382.45
3	2025-03-12 09:33:00-04:00	383.46	384.68	383.30	384.18	0.12	1.38	NaN	382.61
4	2025-03-12 09:34:00-04:00	384.24	384.84	384.00	384.04	0.11	0.84	1.24	382.73

saving as: stock_information/htmlplot/MSFT-2025-03-12.html

MSFT - 2025-03-12



2025-03-13

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	383.15	384.00	382.59	384.00	0.93	1.41	NaN	384.00
1	2025-03-13 09:31:00-04:00	384.06	385.25	383.92	384.53	0.13	1.33	NaN	384.07
2	2025-03-13 09:32:00-04:00	384.71	385.31	384.71	384.90	0.08	0.78	NaN	384.12
3	2025-03-13 09:33:00-04:00	384.93	385.03	384.03	384.06	0.07	1.00	NaN	384.12
4	2025-03-13 09:34:00-04:00	383.97	384.64	383.89	384.55	0.09	0.75	1.05	384.15

saving as: stock_information/htmlplot/MSFT-2025-03-13.html

MSFT - 2025-03-13



2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	381.04	381.57	379.51	381.04	0.88	2.06	NaN	381.04
1	2025-03-14 09:31:00-04:00	380.97	381.80	380.85	380.98	0.11	0.95	NaN	381.03
2	2025-03-14 09:32:00-04:00	381.05	381.80	380.83	381.49	0.08	0.97	NaN	381.07
3	2025-03-14 09:33:00-04:00	381.55	382.64	381.44	382.47	0.12	1.20	NaN	381.21
4	2025-03-14 09:34:00-04:00	382.40	382.80	382.14	382.43	0.08	0.66	1.17	381.29

saving as: stock_information/htmlplot/MSFT-2025-03-14.html

MSFT - 2025-03-14

Candlestick Chart



```
file_list: ['META_2025-03-14.csv', 'META_2025-03-13.csv', 'META_2025-03-12.csv', 'META_2025-03-11.csv', 'META_2025-03-10.csv']
working with get_atr_vwap
```

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
```

```
source_file: META_2025-03-14.csv
```

```
ticker: META
```

	Datetime	Open	High	Low	Close	Volume
0	2025-03-14 13:30:00+00:00	603.02	604.20	602.02	603.01	638264
1	2025-03-14 13:31:00+00:00	603.09	603.75	602.27	602.84	100309
2	2025-03-14 13:32:00+00:00	602.67	603.09	600.60	601.13	81570
3	2025-03-14 13:33:00+00:00	601.09	603.78	600.70	602.74	98173
4	2025-03-14 13:34:00+00:00	603.26	603.32	601.17	602.07	97014

	Datetime	Open	High	Low	Close	Volume
--	----------	------	------	-----	-------	--------

0	2025-03-14 13:30:00+00:00	603.02	604.20	602.02	603.01	0.638264
---	---------------------------	--------	--------	--------	--------	----------

1	2025-03-14 13:31:00+00:00	603.09	603.75	602.27	602.84	0.100309
---	---------------------------	--------	--------	--------	--------	----------

```

2 2025-03-14 13:32:00+00:00 602.67 603.09 600.60 601.13 0.081570
3 2025-03-14 13:33:00+00:00 601.09 603.78 600.70 602.74 0.098173
4 2025-03-14 13:34:00+00:00 603.26 603.32 601.17 602.07 0.097014
    Datetime   Open   High   Low  Close  Volume
0 2025-03-14 09:30:00-04:00 603.02 604.20 602.02 603.01 0.638264
1 2025-03-14 09:31:00-04:00 603.09 603.75 602.27 602.84 0.100309
2 2025-03-14 09:32:00-04:00 602.67 603.09 600.60 601.13 0.081570
3 2025-03-14 09:33:00-04:00 601.09 603.78 600.70 602.74 0.098173
4 2025-03-14 09:34:00-04:00 603.26 603.32 601.17 602.07 0.097014
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: META_2025-03-13.csv
ticker: META
    Datetime   Open   High   Low  Close  Volume
0 2025-03-13 13:30:00+00:00 620.24 620.50 617.29 618.38 372148
1 2025-03-13 13:31:00+00:00 618.20 618.94 617.15 618.59 52330
2 2025-03-13 13:32:00+00:00 618.53 619.40 617.45 618.40 57949
3 2025-03-13 13:33:00+00:00 617.67 618.18 616.60 617.16 27678
4 2025-03-13 13:34:00+00:00 616.61 618.37 615.63 618.07 38246
    Datetime   Open   High   Low  Close  Volume
0 2025-03-13 13:30:00+00:00 620.24 620.50 617.29 618.38 0.372148
1 2025-03-13 13:31:00+00:00 618.20 618.94 617.15 618.59 0.052330
2 2025-03-13 13:32:00+00:00 618.53 619.40 617.45 618.40 0.057949
3 2025-03-13 13:33:00+00:00 617.67 618.18 616.60 617.16 0.027678
4 2025-03-13 13:34:00+00:00 616.61 618.37 615.63 618.07 0.038246
    Datetime   Open   High   Low  Close  Volume
0 2025-03-13 09:30:00-04:00 620.24 620.50 617.29 618.38 0.372148
1 2025-03-13 09:31:00-04:00 618.20 618.94 617.15 618.59 0.052330
2 2025-03-13 09:32:00-04:00 618.53 619.40 617.45 618.40 0.057949
3 2025-03-13 09:33:00-04:00 617.67 618.18 616.60 617.16 0.027678
4 2025-03-13 09:34:00-04:00 616.61 618.37 615.63 618.07 0.038246
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: META_2025-03-12.csv
ticker: META
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00 629.16 630.00 625.00 626.40 1113334
1 2025-03-12 13:31:00+00:00 626.52 631.24 626.44 630.46 227673
2 2025-03-12 13:32:00+00:00 630.46 630.77 626.84 628.51 198421
3 2025-03-12 13:33:00+00:00 628.25 631.75 628.24 630.53 169151
4 2025-03-12 13:34:00+00:00 630.69 631.22 629.70 630.00 137172
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00 629.16 630.00 625.00 626.40 1.113334
1 2025-03-12 13:31:00+00:00 626.52 631.24 626.44 630.46 0.227673
2 2025-03-12 13:32:00+00:00 630.46 630.77 626.84 628.51 0.198421
3 2025-03-12 13:33:00+00:00 628.25 631.75 628.24 630.53 0.169151
4 2025-03-12 13:34:00+00:00 630.69 631.22 629.70 630.00 0.137172
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 09:30:00-04:00 629.16 630.00 625.00 626.40 1.113334
1 2025-03-12 09:31:00-04:00 626.52 631.24 626.44 630.46 0.227673
2 2025-03-12 09:32:00-04:00 630.46 630.77 626.84 628.51 0.198421
3 2025-03-12 09:33:00-04:00 628.25 631.75 628.24 630.53 0.169151
4 2025-03-12 09:34:00-04:00 630.69 631.22 629.70 630.00 0.137172
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: META_2025-03-11.csv
ticker: META
    Datetime   Open   High   Low  Close  Volume

```

```

-----+-----+-----+-----+-----+-----+
0 2025-03-11 13:30:00+00:00 598.67 598.67 598.67 598.67 765865
1 2025-03-11 13:31:00+00:00 598.96 602.46 598.79 600.98 116064
2 2025-03-11 13:32:00+00:00 601.66 602.73 599.40 600.86 202439
3 2025-03-11 13:33:00+00:00 600.81 601.00 598.51 600.58 127703
4 2025-03-11 13:34:00+00:00 600.42 602.68 600.35 602.01 108274
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 598.67 598.67 598.67 598.67 0.765865
1 2025-03-11 13:31:00+00:00 598.96 602.46 598.79 600.98 0.116064
2 2025-03-11 13:32:00+00:00 601.66 602.73 599.40 600.86 0.202439
3 2025-03-11 13:33:00+00:00 600.81 601.00 598.51 600.58 0.127703
4 2025-03-11 13:34:00+00:00 600.42 602.68 600.35 602.01 0.108274
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 09:30:00-04:00 598.67 598.67 598.67 598.67 0.765865
1 2025-03-11 09:31:00-04:00 598.96 602.46 598.79 600.98 0.116064
2 2025-03-11 09:32:00-04:00 601.66 602.73 599.40 600.86 0.202439
3 2025-03-11 09:33:00-04:00 600.81 601.00 598.51 600.58 0.127703
4 2025-03-11 09:34:00-04:00 600.42 602.68 600.35 602.01 0.108274
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: META_2025-03-10.csv
ticker: META
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00 608.07 610.00 604.09 604.36 751660
1 2025-03-10 13:31:00+00:00 604.45 608.93 604.09 608.28 95454
2 2025-03-10 13:32:00+00:00 608.29 608.50 604.08 605.37 118502
3 2025-03-10 13:33:00+00:00 605.37 606.00 603.50 604.97 75800
4 2025-03-10 13:34:00+00:00 605.00 606.17 604.52 605.54 59498
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00 608.07 610.00 604.09 604.36 0.751660
1 2025-03-10 13:31:00+00:00 604.45 608.93 604.09 608.28 0.095454
2 2025-03-10 13:32:00+00:00 608.29 608.50 604.08 605.37 0.118502
3 2025-03-10 13:33:00+00:00 605.37 606.00 603.50 604.97 0.075800
4 2025-03-10 13:34:00+00:00 605.00 606.17 604.52 605.54 0.059498
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 09:30:00-04:00 608.07 610.00 604.09 604.36 0.751660
1 2025-03-10 09:31:00-04:00 604.45 608.93 604.09 608.28 0.095454
2 2025-03-10 09:32:00-04:00 608.29 608.50 604.08 605.37 0.118502
3 2025-03-10 09:33:00-04:00 605.37 606.00 603.50 604.97 0.075800
4 2025-03-10 09:34:00-04:00 605.00 606.17 604.52 605.54 0.059498
resampling to: 1T
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
    'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
    'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
    'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
    'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
    'T' is deprecated and will be removed in a future version, please use 'min' instead.

merged_df:           Datetime   Open   High   Low  Close  Volume   TR \
0 2025-03-14 09:30:00-04:00 603.02 604.20 602.02 603.01 0.64 2.18

```

```

1 2025-03-14 09:31:00-04:00 603.09 603.75 602.27 602.84 0.10 1.48
2 2025-03-14 09:32:00-04:00 602.67 603.09 600.60 601.13 0.08 2.49
3 2025-03-14 09:33:00-04:00 601.09 603.78 600.70 602.74 0.10 3.08
4 2025-03-14 09:34:00-04:00 603.26 603.32 601.17 602.07 0.10 2.15

```

```

ATR      vwap
0  NaN  603.01
1  NaN  602.99
2  NaN  602.80
3  NaN  602.80
4  2.28  602.73
2025-03-10

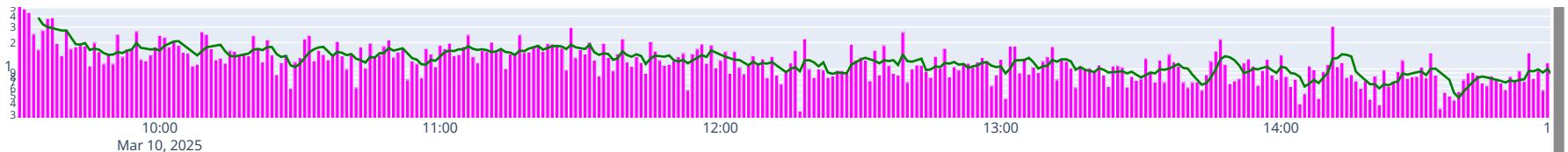
```

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-10 09:30:00-04:00	608.07	610.00	604.09	604.36	0.75	5.91	NaN	604.36
1	2025-03-10 09:31:00-04:00	604.45	608.93	604.09	608.28	0.10	4.84	NaN	604.80
2	2025-03-10 09:32:00-04:00	608.29	608.50	604.08	605.37	0.12	4.42	NaN	604.87
3	2025-03-10 09:33:00-04:00	605.37	606.00	603.50	604.97	0.08	2.50	NaN	604.88
4	2025-03-10 09:34:00-04:00	605.00	606.17	604.52	605.54	0.06	1.65	3.86	604.91

saving as: stock_information/htmlplot/META-2025-03-10.html

META - 2025-03-10





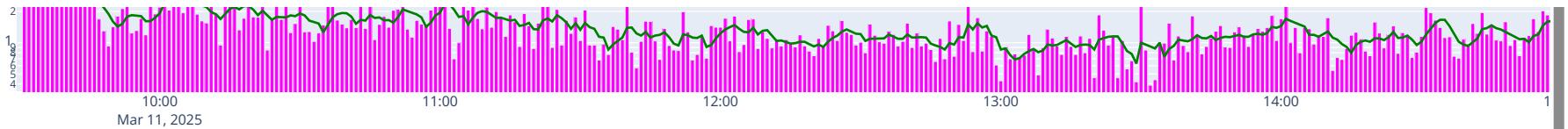
2025-03-11

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	598.67	598.67	598.67	598.67	0.77	0.00	NaN	598.67
1	2025-03-11 09:31:00-04:00	598.96	602.46	598.79	600.98	0.12	3.79	NaN	598.97
2	2025-03-11 09:32:00-04:00	601.66	602.73	599.40	600.86	0.20	3.33	NaN	599.33
3	2025-03-11 09:33:00-04:00	600.81	601.00	598.51	600.58	0.13	2.49	NaN	599.46
4	2025-03-11 09:34:00-04:00	600.42	602.68	600.35	602.01	0.11	2.33	2.39	599.67

saving as: stock_information/htmlplot/META-2025-03-11.html

META - 2025-03-11





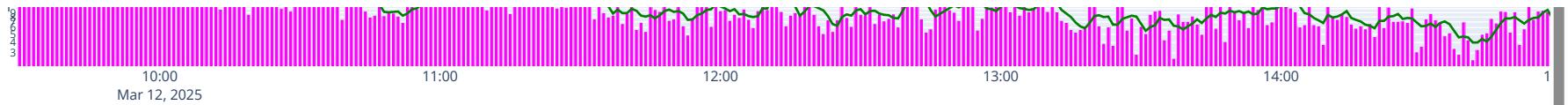
2025-03-12

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-12 09:30:00-04:00	629.16	630.00	625.00	626.40	1.11	5.00	NaN	626.40
1	2025-03-12 09:31:00-04:00	626.52	631.24	626.44	630.46	0.23	4.84	NaN	627.09
2	2025-03-12 09:32:00-04:00	630.46	630.77	626.84	628.51	0.20	3.93	NaN	627.27
3	2025-03-12 09:33:00-04:00	628.25	631.75	628.24	630.53	0.17	3.51	NaN	627.59
4	2025-03-12 09:34:00-04:00	630.69	631.22	629.70	630.00	0.14	1.52	3.76	627.77

saving as: stock_information/htmlplot/META-2025-03-12.html

META - 2025-03-12





2025-03-13

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	620.24	620.50	617.29	618.38	0.37	3.21	Nan	618.38
1	2025-03-13 09:31:00-04:00	618.20	618.94	617.15	618.59	0.05	1.79	Nan	618.41
2	2025-03-13 09:32:00-04:00	618.53	619.40	617.45	618.40	0.06	1.95	Nan	618.41
3	2025-03-13 09:33:00-04:00	617.67	618.18	616.60	617.16	0.03	1.80	Nan	618.34
4	2025-03-13 09:34:00-04:00	616.61	618.37	615.63	618.07	0.04	2.74	2.3	618.32

saving as: stock_information/htmlplot/META-2025-03-13.html

META - 2025-03-13





2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	603.02	604.20	602.02	603.01	0.64	2.18	NaN	603.01
1	2025-03-14 09:31:00-04:00	603.09	603.75	602.27	602.84	0.10	1.48	NaN	602.99
2	2025-03-14 09:32:00-04:00	602.67	603.09	600.60	601.13	0.08	2.49	NaN	602.80
3	2025-03-14 09:33:00-04:00	601.09	603.78	600.70	602.74	0.10	3.08	NaN	602.80
4	2025-03-14 09:34:00-04:00	603.26	603.32	601.17	602.07	0.10	2.15	2.28	602.73

saving as: stock_information/htmlplot/META-2025-03-14.html

META - 2025-03-14



10:00
Mar 14, 2025

1

```
file_list: ['AAPL_2025-03-14.csv', 'AAPL_2025-03-13.csv', 'AAPL_2025-03-12.csv', 'AAPL_2025-03-11.csv', 'AAPL_2025-03-10.csv']
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AAPL_2025-03-14.csv
ticker: AAPL
    Datetime      Open     High     Low    Close   Volume
0 2025-03-14 13:30:00+00:00  211.25  212.26  211.00  211.91  2556910
1 2025-03-14 13:31:00+00:00  211.91  213.23  211.91  212.42  491841
2 2025-03-14 13:32:00+00:00  212.51  212.92  212.15  212.45  392775
3 2025-03-14 13:33:00+00:00  212.50  213.25  212.44  213.15  408872
4 2025-03-14 13:34:00+00:00  213.07  213.43  212.98  213.40  356746
    Datetime      Open     High     Low    Close   Volume
0 2025-03-14 13:30:00+00:00  211.25  212.26  211.00  211.91  2.556910
1 2025-03-14 13:31:00+00:00  211.91  213.23  211.91  212.42  0.491841
2 2025-03-14 13:32:00+00:00  212.51  212.92  212.15  212.45  0.392775
3 2025-03-14 13:33:00+00:00  212.50  213.25  212.44  213.15  0.408872
4 2025-03-14 13:34:00+00:00  213.07  213.43  212.98  213.40  0.356746
    Datetime      Open     High     Low    Close   Volume
0 2025-03-14 09:30:00-04:00  211.25  212.26  211.00  211.91  2.556910
1 2025-03-14 09:31:00-04:00  211.91  213.23  211.91  212.42  0.491841
2 2025-03-14 09:32:00-04:00  212.51  212.92  212.15  212.45  0.392775
3 2025-03-14 09:33:00-04:00  212.50  213.25  212.44  213.15  0.408872
4 2025-03-14 09:34:00-04:00  213.07  213.43  212.98  213.40  0.356746
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AAPL_2025-03-13.csv
ticker: AAPL
    Datetime      Open     High     Low    Close   Volume
0 2025-03-13 13:30:00+00:00  215.94  216.02  214.90  215.17  2139026
1 2025-03-13 13:31:00+00:00  215.15  215.63  215.02  215.13  246775
2 2025-03-13 13:32:00+00:00  215.20  215.66  214.69  214.76  263780
3 2025-03-13 13:33:00+00:00  214.79  215.10  214.37  214.64  407406
4 2025-03-13 13:34:00+00:00  214.62  214.96  214.37  214.88  313707
    Datetime      Open     High     Low    Close   Volume
0 2025-03-13 13:30:00+00:00  215.94  216.02  214.90  215.17  2.139026
1 2025-03-13 13:31:00+00:00  215.15  215.63  215.02  215.13  0.246775
2 2025-03-13 13:32:00+00:00  215.20  215.66  214.69  214.76  0.263780
3 2025-03-13 13:33:00+00:00  214.79  215.10  214.37  214.64  0.407406
4 2025-03-13 13:34:00+00:00  214.62  214.96  214.37  214.88  0.313707
    Datetime      Open     High     Low    Close   Volume
0 2025-03-13 09:30:00-04:00  215.94  216.02  214.90  215.17  2.139026
1 2025-03-13 09:31:00-04:00  215.15  215.63  215.02  215.13  0.246775
2 2025-03-13 09:32:00-04:00  215.20  215.66  214.69  214.76  0.263780
3 2025-03-13 09:33:00-04:00  214.79  215.10  214.37  214.64  0.407406
4 2025-03-13 09:34:00-04:00  214.62  214.96  214.37  214.88  0.313707
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AAPL_2025-03-12.csv
ticker: AAPL
    Datetime      Open     High     Low    Close   Volume
0 2025-03-12 13:30:00+00:00  220.18  220.50  219.27  219.85  2408308
1 2025-03-12 13:31:00+00:00  219.76  220.33  219.56  219.64  294864
2 2025-03-12 13:32:00+00:00  219.60  220.24  219.60  219.97  325135
3 2025-03-12 13:33:00+00:00  219.97  220.49  219.97  220.16  388722
```

```

4 2025-03-12 13:34:00+00:00 220.18 221.29 220.13 220.44 523147
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00 220.18 220.50 219.27 219.85 2.408308
1 2025-03-12 13:31:00+00:00 219.76 220.33 219.56 219.64 0.294864
2 2025-03-12 13:32:00+00:00 219.60 220.24 219.60 219.97 0.325135
3 2025-03-12 13:33:00+00:00 219.97 220.49 219.97 220.16 0.388722
4 2025-03-12 13:34:00+00:00 220.18 221.29 220.13 220.44 0.523147
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 09:30:00-04:00 220.18 220.50 219.27 219.85 2.408308
1 2025-03-12 09:31:00-04:00 219.76 220.33 219.56 219.64 0.294864
2 2025-03-12 09:32:00-04:00 219.60 220.24 219.60 219.97 0.325135
3 2025-03-12 09:33:00-04:00 219.97 220.49 219.97 220.16 0.388722
4 2025-03-12 09:34:00-04:00 220.18 221.29 220.13 220.44 0.523147
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AAPL_2025-03-11.csv
ticker: AAPL
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 223.80 224.77 223.29 224.17 3147116
1 2025-03-11 13:31:00+00:00 224.21 224.76 223.64 223.64 297340
2 2025-03-11 13:32:00+00:00 223.60 223.82 222.65 222.92 497947
3 2025-03-11 13:33:00+00:00 222.83 224.28 222.83 224.16 405314
4 2025-03-11 13:34:00+00:00 224.18 224.68 223.78 224.32 276784
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 223.80 224.77 223.29 224.17 3.147116
1 2025-03-11 13:31:00+00:00 224.21 224.76 223.64 223.64 0.297340
2 2025-03-11 13:32:00+00:00 223.60 223.82 222.65 222.92 0.497947
3 2025-03-11 13:33:00+00:00 222.83 224.28 222.83 224.16 0.405314
4 2025-03-11 13:34:00+00:00 224.18 224.68 223.78 224.32 0.276784
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 09:30:00-04:00 223.80 224.77 223.29 224.17 3.147116
1 2025-03-11 09:31:00-04:00 224.21 224.76 223.64 223.64 0.297340
2 2025-03-11 09:32:00-04:00 223.60 223.82 222.65 222.92 0.497947
3 2025-03-11 09:33:00-04:00 222.83 224.28 222.83 224.16 0.405314
4 2025-03-11 09:34:00-04:00 224.18 224.68 223.78 224.32 0.276784
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AAPL_2025-03-10.csv
ticker: AAPL
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00 235.48 236.16 234.91 235.06 2001055
1 2025-03-10 13:31:00+00:00 235.05 235.14 233.70 233.76 325570
2 2025-03-10 13:32:00+00:00 233.76 233.82 232.65 232.87 532766
3 2025-03-10 13:33:00+00:00 232.85 232.91 231.79 232.02 489342
4 2025-03-10 13:34:00+00:00 231.96 232.56 231.90 232.34 383257
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00 235.48 236.16 234.91 235.06 2.001055
1 2025-03-10 13:31:00+00:00 235.05 235.14 233.70 233.76 0.325570
2 2025-03-10 13:32:00+00:00 233.76 233.82 232.65 232.87 0.532766
3 2025-03-10 13:33:00+00:00 232.85 232.91 231.79 232.02 0.489342
4 2025-03-10 13:34:00+00:00 231.96 232.56 231.90 232.34 0.383257
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 09:30:00-04:00 235.48 236.16 234.91 235.06 2.001055
1 2025-03-10 09:31:00-04:00 235.05 235.14 233.70 233.76 0.325570
2 2025-03-10 09:32:00-04:00 233.76 233.82 232.65 232.87 0.532766
3 2025-03-10 09:33:00-04:00 232.85 232.91 231.79 232.02 0.489342
4 2025-03-10 09:34:00-04:00 231.96 232.56 231.90 232.34 0.383257
resampling to: 1T
merged_df:          Datetime   Open   High   Low  Close  Volume   TR \
0 2025-03-14 09:30:00-04:00 211.25 212.26 211.00 211.91  2.56  1.26

```

```
1 2025-03-14 09:31:00-04:00 211.91 213.23 211.91 212.42 0.49 1.32
2 2025-03-14 09:32:00-04:00 212.51 212.92 212.15 212.45 0.39 0.77
3 2025-03-14 09:33:00-04:00 212.50 213.25 212.44 213.15 0.41 0.81
4 2025-03-14 09:34:00-04:00 213.07 213.43 212.98 213.40 0.36 0.45
```

```
      ATR      vwap
0  NaN  211.91
1  NaN  211.99
2  NaN  212.04
3  NaN  212.16
4  0.92  212.27
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

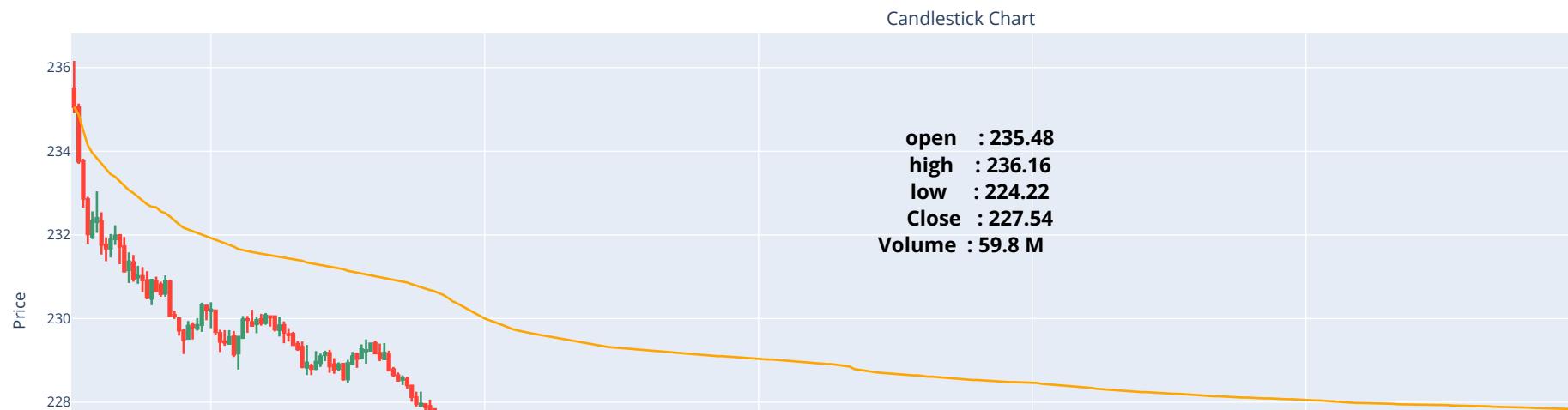
'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
2025-03-10
      Datetime   Open     High      Low    Close  Volume     TR      ATR      vwap
0 2025-03-10 09:30:00-04:00 235.48  236.16  234.91  235.06  2.00  1.25  NaN  235.06
1 2025-03-10 09:31:00-04:00 235.05  235.14  233.70  233.76  0.33  1.44  NaN  234.88
2 2025-03-10 09:32:00-04:00 233.76  233.82  232.65  232.87  0.53  1.17  NaN  234.50
3 2025-03-10 09:33:00-04:00 232.85  232.91  231.79  232.02  0.49  1.12  NaN  234.14
4 2025-03-10 09:34:00-04:00 231.96  232.56  231.90  232.34  0.38  0.66  1.13  233.96
saving as: stock_information/htmlplot/AAPL-2025-03-10.html
```

AAPL - 2025-03-10





2025-03-11

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	223.80	224.77	223.29	224.17	3.15	1.48	NaN	224.17
1	2025-03-11 09:31:00-04:00	224.21	224.76	223.64	223.64	0.30	1.12	NaN	224.12
2	2025-03-11 09:32:00-04:00	223.60	223.82	222.65	222.92	0.50	1.17	NaN	223.97
3	2025-03-11 09:33:00-04:00	222.83	224.28	222.83	224.16	0.41	1.45	NaN	223.99
4	2025-03-11 09:34:00-04:00	224.18	224.68	223.78	224.32	0.28	0.90	1.22	224.01

saving as: stock_information/htmlplot/AAPL-2025-03-11.html

AAPL - 2025-03-11





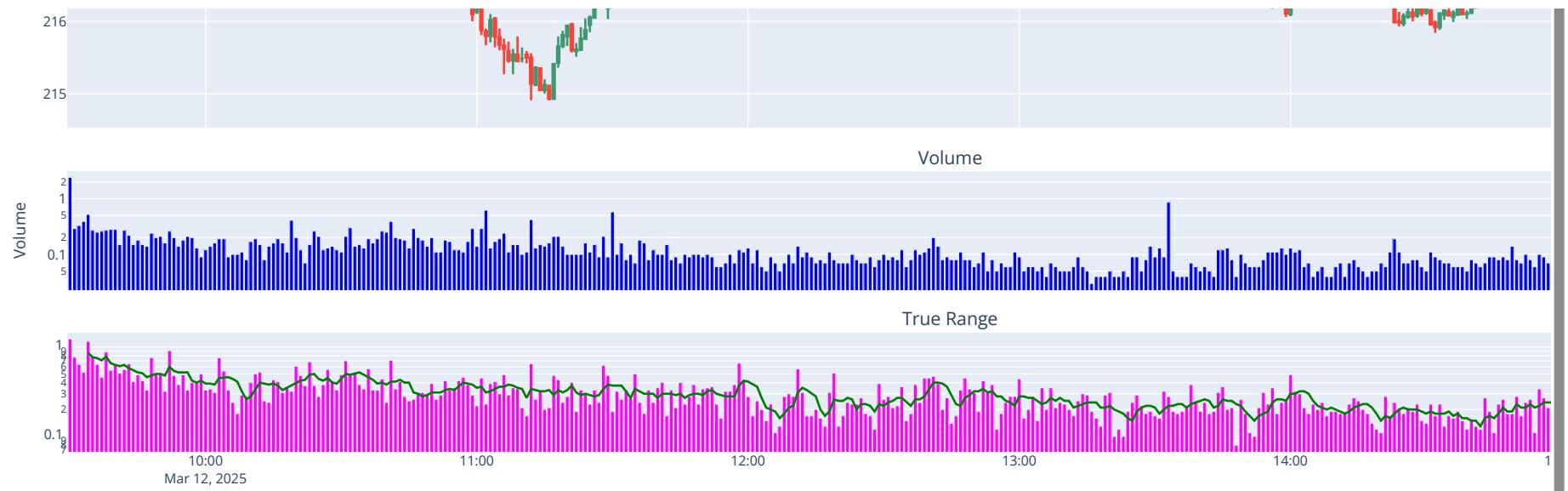
2025-03-12

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-12 09:30:00-04:00	220.18	220.50	219.27	219.85	2.41	1.23	NaN	219.85
1	2025-03-12 09:31:00-04:00	219.76	220.33	219.56	219.64	0.29	0.77	NaN	219.83
2	2025-03-12 09:32:00-04:00	219.60	220.24	219.60	219.97	0.33	0.64	NaN	219.84
3	2025-03-12 09:33:00-04:00	219.97	220.49	219.97	220.16	0.39	0.52	NaN	219.88
4	2025-03-12 09:34:00-04:00	220.18	221.29	220.13	220.44	0.52	1.16	0.86	219.95

saving as: stock_information/htmlplot/AAPL-2025-03-12.html

AAPL - 2025-03-12





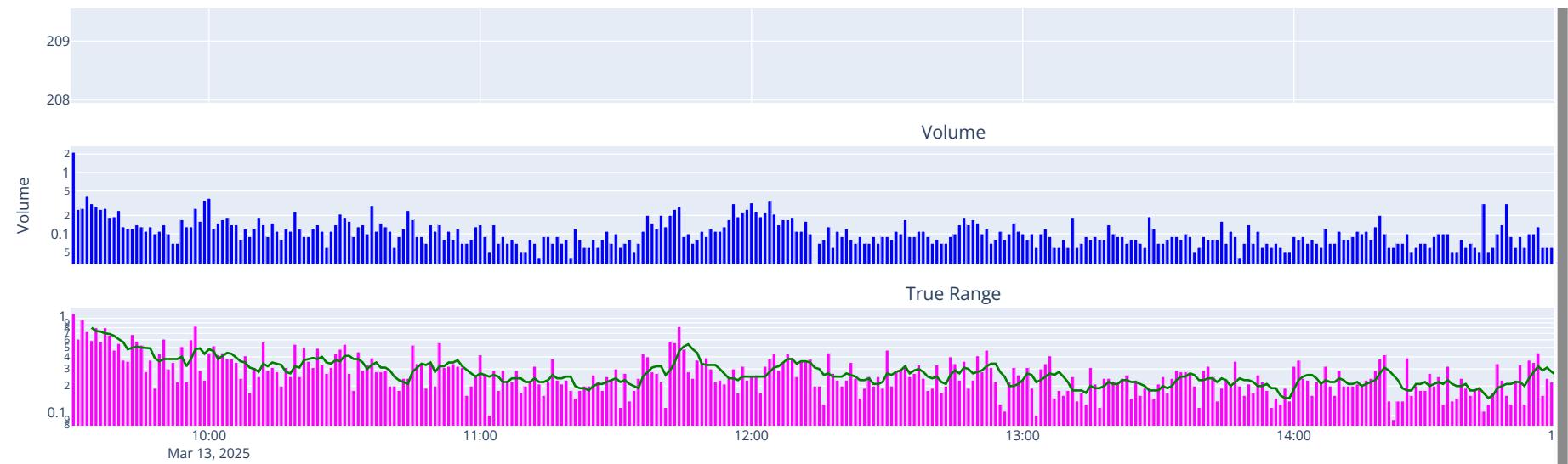
2025-03-13

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	215.94	216.02	214.90	215.17	2.14	1.12	NaN	215.17
1	2025-03-13 09:31:00-04:00	215.15	215.63	215.02	215.13	0.25	0.61	NaN	215.17
2	2025-03-13 09:32:00-04:00	215.20	215.66	214.69	214.76	0.26	0.97	NaN	215.13
3	2025-03-13 09:33:00-04:00	214.79	215.10	214.37	214.64	0.41	0.73	NaN	215.06
4	2025-03-13 09:34:00-04:00	214.62	214.96	214.37	214.88	0.31	0.59	0.8	215.04

saving as: stock_information/htmlplot/AAPL-2025-03-13.html

AAPL - 2025-03-13





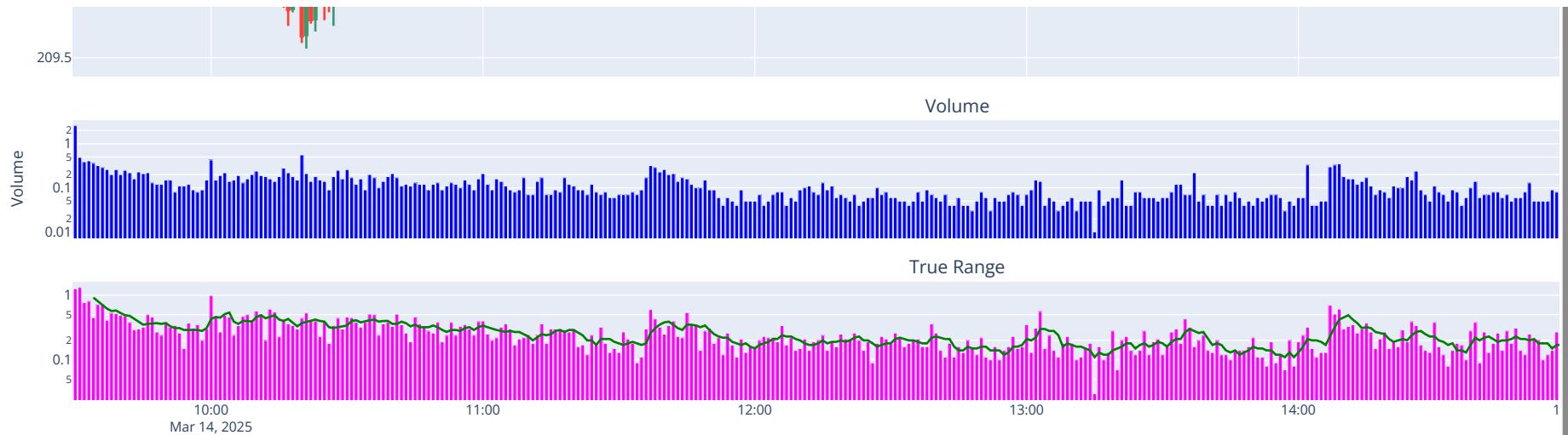
2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	211.25	212.26	211.00	211.91	2.56	1.26	NaN	211.91
1	2025-03-14 09:31:00-04:00	211.91	213.23	211.91	212.42	0.49	1.32	NaN	211.99
2	2025-03-14 09:32:00-04:00	212.51	212.92	212.15	212.45	0.39	0.77	NaN	212.04
3	2025-03-14 09:33:00-04:00	212.50	213.25	212.44	213.15	0.41	0.81	NaN	212.16
4	2025-03-14 09:34:00-04:00	213.07	213.43	212.98	213.40	0.36	0.45	0.92	212.27

saving as: stock_information/htmlplot/AAPL-2025-03-14.html

AAPL - 2025-03-14





```
file_list: ['GOOGL_2025-03-14.csv', 'GOOGL_2025-03-13.csv', 'GOOGL_2025-03-12.csv', 'GOOGL_2025-03-11.csv', 'GOOGL_2025-03-10.csv']
```

working with get_atr_vwap

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

column_names: object

```
source_file: GOOGL_2025-03-14.csv
```

ticker: GOOGL

	Datetime	Open	High	Low	Close	Volume
0	2025-03-14 13:30:00+00:00	163.27	163.94	163.07	163.62	2844811
1	2025-03-14 13:31:00+00:00	163.61	164.07	163.33	163.38	204958
2	2025-03-14 13:32:00+00:00	163.39	163.68	163.19	163.23	195252
3	2025-03-14 13:33:00+00:00	163.27	163.83	163.13	163.65	196838
4	2025-03-14 13:34:00+00:00	163.64	163.86	163.40	163.66	140616

	Datetime	Open	High	Low	Close	Volume
0	2025-03-14 13:30:00+00:00	163.27	163.94	163.07	163.62	2.844811
1	2025-03-14 13:31:00+00:00	163.61	164.07	163.33	163.38	0.204958
2	2025-03-14 13:32:00+00:00	163.39	163.68	163.19	163.23	0.195252
3	2025-03-14 13:33:00+00:00	163.27	163.83	163.13	163.65	0.196838
4	2025-03-14 13:34:00+00:00	163.64	163.86	163.40	163.66	0.140616

	Datetime	Open	High	Low	Close	Volume
0	2025-03-14 09:30:00-04:00	163.27	163.94	163.07	163.62	2.844811
1	2025-03-14 09:31:00-04:00	163.61	164.07	163.33	163.38	0.204958
2	2025-03-14 09:32:00-04:00	163.39	163.68	163.19	163.23	0.195252
3	2025-03-14 09:33:00-04:00	163.27	163.83	163.13	163.65	0.196838
4	2025-03-14 09:34:00-04:00	163.64	163.86	163.40	163.66	0.140616

resampling to: 1T

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

working with get_atr_vwap

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

column_names: object

```
source_file: GOOGL_2025-03-13.csv
```

ticker: GOOGL

	Datetime	Open	High	Low	Close	Volume
0	2025-03-13 13:30:00+00:00	166.05	166.13	164.70	164.90	2975427
1	2025-03-13 13:31:00+00:00	164.86	165.69	164.65	165.41	217739
2	2025-03-13 13:32:00+00:00	165.38	166.09	165.38	165.68	158161
3	2025-03-13 13:33:00+00:00	165.71	165.76	164.98	165.31	155601
4	2025-03-13 13:34:00+00:00	165.25	165.66	165.11	165.62	100025

```

4    2025-03-13 13:30:00+00:00 166.05 166.13 164.70 164.90 2.975427
      Datetime   Open   High   Low  Close  Volume
0 2025-03-13 13:31:00+00:00 164.86 165.69 164.65 165.41 0.217739
1 2025-03-13 13:32:00+00:00 165.38 166.09 165.38 165.68 0.158161
2 2025-03-13 13:33:00+00:00 165.71 165.76 164.98 165.31 0.155601
3 2025-03-13 13:34:00+00:00 165.25 165.66 165.11 165.62 0.108825
      Datetime   Open   High   Low  Close  Volume
0 2025-03-13 09:30:00-04:00 166.05 166.13 164.70 164.90 2.975427
1 2025-03-13 09:31:00-04:00 164.86 165.69 164.65 165.41 0.217739
2 2025-03-13 09:32:00-04:00 165.38 166.09 165.38 165.68 0.158161
3 2025-03-13 09:33:00-04:00 165.71 165.76 164.98 165.31 0.155601
4 2025-03-13 09:34:00-04:00 165.25 165.66 165.11 165.62 0.108825
resampling to: 1T
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: GOOGL_2025-03-12.csv
ticker: GOOGL
      Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00 166.58 166.99 166.14 166.36 2613594
1 2025-03-12 13:31:00+00:00 166.40 167.05 166.36 166.67 178439
2 2025-03-12 13:32:00+00:00 166.70 166.90 166.29 166.84 156743
3 2025-03-12 13:33:00+00:00 166.85 167.37 166.80 167.01 181417
4 2025-03-12 13:34:00+00:00 166.98 167.27 166.66 166.75 119667
      Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00 166.58 166.99 166.14 166.36 2.613594
1 2025-03-12 13:31:00+00:00 166.40 167.05 166.36 166.67 0.178439
2 2025-03-12 13:32:00+00:00 166.70 166.90 166.29 166.84 0.156743
3 2025-03-12 13:33:00+00:00 166.85 167.37 166.80 167.01 0.181417
4 2025-03-12 13:34:00+00:00 166.98 167.27 166.66 166.75 0.119667
      Datetime   Open   High   Low  Close  Volume
0 2025-03-12 09:30:00-04:00 166.58 166.99 166.14 166.36 2.613594
1 2025-03-12 09:31:00-04:00 166.40 167.05 166.36 166.67 0.178439
2 2025-03-12 09:32:00-04:00 166.70 166.90 166.29 166.84 0.156743
3 2025-03-12 09:33:00-04:00 166.85 167.37 166.80 167.01 0.181417
4 2025-03-12 09:34:00-04:00 166.98 167.27 166.66 166.75 0.119667
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: GOOGL_2025-03-11.csv
ticker: GOOGL
      Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 164.91 165.86 164.56 165.74 2545298
1 2025-03-11 13:31:00+00:00 165.74 166.07 165.47 165.63 144762
2 2025-03-11 13:32:00+00:00 165.62 166.04 165.42 165.90 117088
3 2025-03-11 13:33:00+00:00 165.92 166.23 165.57 165.99 65360
4 2025-03-11 13:34:00+00:00 166.14 166.31 165.85 165.99 79723
      Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 164.91 165.86 164.56 165.74 2.545298
1 2025-03-11 13:31:00+00:00 165.74 166.07 165.47 165.63 0.144762
2 2025-03-11 13:32:00+00:00 165.62 166.04 165.42 165.90 0.117088
3 2025-03-11 13:33:00+00:00 165.92 166.23 165.57 165.99 0.065360
4 2025-03-11 13:34:00+00:00 166.14 166.31 165.85 165.99 0.079723
      Datetime   Open   High   Low  Close  Volume
0 2025-03-11 09:30:00-04:00 164.91 165.86 164.56 165.74 2.545298
1 2025-03-11 09:31:00-04:00 165.74 166.07 165.47 165.63 0.144762
2 2025-03-11 09:32:00-04:00 165.62 166.04 165.42 165.90 0.117088
3 2025-03-11 09:33:00-04:00 165.92 166.23 165.57 165.99 0.065360
4 2025-03-11 09:34:00-04:00 166.14 166.31 165.85 165.99 0.079723

```

```

0 2025-03-11 09:31:00-04:00 104.91 105.00 104.90 105.14 0.54570
1 2025-03-11 09:32:00-04:00 165.74 166.07 165.47 165.63 0.144762
2 2025-03-11 09:33:00-04:00 165.62 166.04 165.42 165.90 0.117088
3 2025-03-11 09:33:00-04:00 165.92 166.23 165.57 165.99 0.065360
4 2025-03-11 09:34:00-04:00 166.14 166.31 165.85 165.99 0.079723
resampling to: 1T
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: GOOGL_2025-03-10.csv
ticker: GOOGL
      Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00 167.88 167.88 167.88 167.88 1956019
1 2025-03-10 13:31:00+00:00 167.86 167.90 166.98 167.62 269099
2 2025-03-10 13:32:00+00:00 167.57 167.57 166.32 166.85 360762
3 2025-03-10 13:33:00+00:00 166.80 166.83 166.06 166.37 308880
4 2025-03-10 13:34:00+00:00 166.36 166.56 166.00 166.20 304753
      Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00 167.88 167.88 167.88 167.88 1.956019
1 2025-03-10 13:31:00+00:00 167.86 167.90 166.98 167.62 0.269099
2 2025-03-10 13:32:00+00:00 167.57 167.57 166.32 166.85 0.360762
3 2025-03-10 13:33:00+00:00 166.80 166.83 166.06 166.37 0.308880
4 2025-03-10 13:34:00+00:00 166.36 166.56 166.00 166.20 0.304753
      Datetime   Open   High   Low  Close  Volume
0 2025-03-10 09:30:00-04:00 167.88 167.88 167.88 167.88 1.956019
1 2025-03-10 09:31:00-04:00 167.86 167.90 166.98 167.62 0.269099
2 2025-03-10 09:32:00-04:00 167.57 167.57 166.32 166.85 0.360762
3 2025-03-10 09:33:00-04:00 166.80 166.83 166.06 166.37 0.308880
4 2025-03-10 09:34:00-04:00 166.36 166.56 166.00 166.20 0.304753
resampling to: 1T
merged_df:
      Datetime   Open   High   Low  Close  Volume    TR \
0 2025-03-14 09:30:00-04:00 163.27 163.94 163.07 163.62  2.84  0.87
1 2025-03-14 09:31:00-04:00 163.61 164.07 163.33 163.38  0.20  0.74
2 2025-03-14 09:32:00-04:00 163.39 163.68 163.19 163.23  0.20  0.49
3 2025-03-14 09:33:00-04:00 163.27 163.83 163.13 163.65  0.20  0.70
4 2025-03-14 09:34:00-04:00 163.64 163.86 163.40 163.66  0.14  0.46

      ATR     vwap
0  NaN  163.62
1  NaN  163.60
2  NaN  163.58
3  NaN  163.59
4  0.65  163.59
2025-03-10
      Datetime   Open   High   Low  Close  Volume    TR     ATR     vwap
0 2025-03-10 09:30:00-04:00 167.88 167.88 167.88 167.88  1.96  0.00  NaN  167.88
1 2025-03-10 09:31:00-04:00 167.86 167.90 166.98 167.62  0.27  0.92  NaN  167.85
2 2025-03-10 09:32:00-04:00 167.57 167.57 166.32 166.85  0.36  1.30  NaN  167.71
3 2025-03-10 09:33:00-04:00 166.80 166.83 166.06 166.37  0.31  0.79  NaN  167.57
4 2025-03-10 09:34:00-04:00 166.36 166.56 166.00 166.20  0.30  0.56  0.71  167.44
saving as: stock_information/htmlplot/GOOGL-2025-03-10.html

```

GOOGL - 2025-03-10

Candlestick Chart



2025-03-11

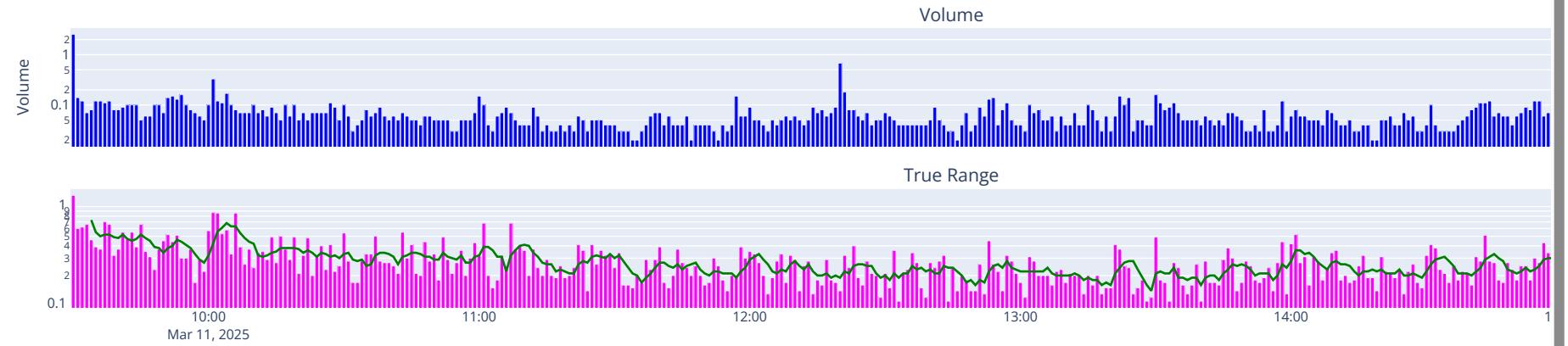
	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	164.91	165.86	164.56	165.74	2.55	1.30	NaN	165.74
1	2025-03-11 09:31:00-04:00	165.74	166.07	165.47	165.63	0.14	0.60	NaN	165.73
2	2025-03-11 09:32:00-04:00	165.62	166.04	165.42	165.90	0.12	0.62	NaN	165.74
3	2025-03-11 09:33:00-04:00	165.92	166.23	165.57	165.99	0.07	0.66	NaN	165.75
4	2025-03-11 09:34:00-04:00	166.14	166.31	165.85	165.99	0.08	0.46	0.73	165.75

saving as: stock_information/htmlplot/GOOGL-2025-03-11.html

GOOGL - 2025-03-11

Candlestick Chart

167



2025-03-12

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-12 09:30:00-04:00	166.58	166.99	166.14	166.36	2.61	0.85	NaN	166.36
1	2025-03-12 09:31:00-04:00	166.40	167.05	166.36	166.67	0.18	0.69	NaN	166.38
2	2025-03-12 09:32:00-04:00	166.70	166.90	166.29	166.84	0.16	0.61	NaN	166.40
3	2025-03-12 09:33:00-04:00	166.85	167.37	166.80	167.01	0.18	0.57	NaN	166.44
4	2025-03-12 09:34:00-04:00	166.98	167.27	166.66	166.75	0.12	0.61	0.67	166.45

saving as: stock_information/htmlplot/GOOG-2025-03-12.html

GOOGL - 2025-03-12

Candlestick Chart



2025-03-13

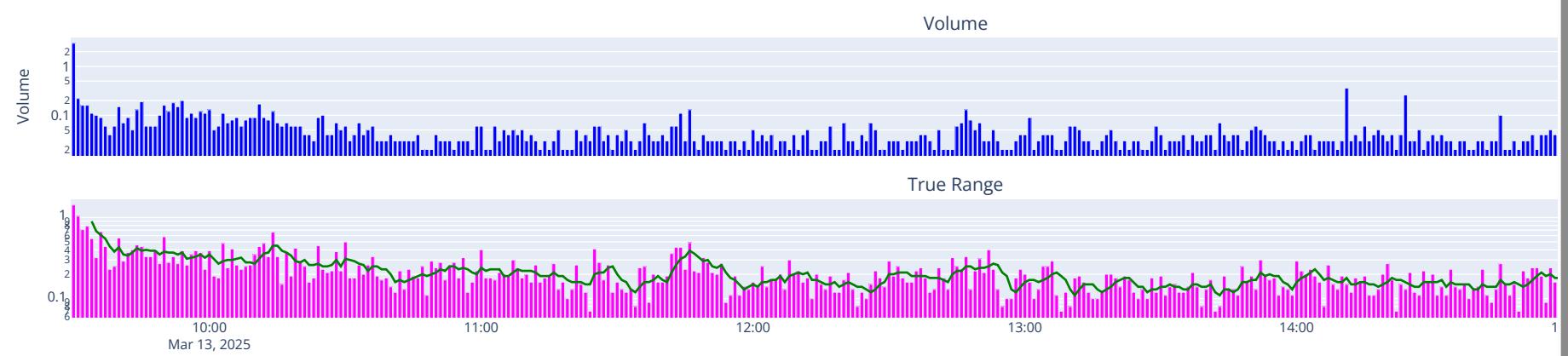
	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	166.05	166.13	164.70	164.90	2.98	1.43	NaN	164.90
1	2025-03-13 09:31:00-04:00	164.86	165.69	164.65	165.41	0.22	1.04	NaN	164.93
2	2025-03-13 09:32:00-04:00	165.38	166.09	165.38	165.68	0.16	0.71	NaN	164.97
3	2025-03-13 09:33:00-04:00	165.71	165.76	164.98	165.31	0.16	0.78	NaN	164.99
4	2025-03-13 09:34:00-04:00	165.25	165.66	165.11	165.62	0.11	0.55	0.9	165.00

saving as: stock_information/htmlplot/GOOG-2025-03-13.html

GOOGL - 2025-03-13

Candlestick Chart





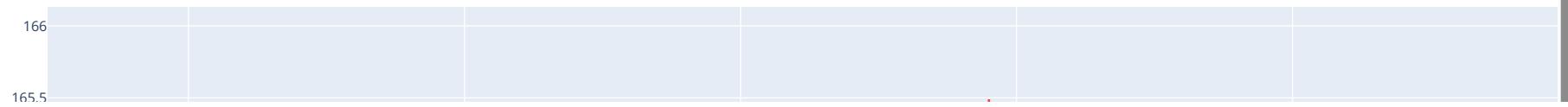
2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	163.27	163.94	163.07	163.62	2.84	0.87	NaN	163.62
1	2025-03-14 09:31:00-04:00	163.61	164.07	163.33	163.38	0.20	0.74	NaN	163.60
2	2025-03-14 09:32:00-04:00	163.39	163.68	163.19	163.23	0.20	0.49	NaN	163.58
3	2025-03-14 09:33:00-04:00	163.27	163.83	163.13	163.65	0.20	0.70	NaN	163.59
4	2025-03-14 09:34:00-04:00	163.64	163.86	163.40	163.66	0.14	0.46	0.65	163.59

saving as: stock_information/htmlplot/GOOGL-2025-03-14.html

GOOGL - 2025-03-14

Candlestick Chart





```

file_list: ['AMZN_2025-03-14.csv', 'AMZN_2025-03-13.csv', 'AMZN_2025-03-12.csv', 'AMZN_2025-03-11.csv', 'AMZN_2025-03-10.csv']
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMZN_2025-03-14.csv
ticker: AMZN

      Datetime   Open   High   Low  Close  Volume
0 2025-03-14 13:30:00+00:00  197.38  197.50  196.45  197.44  2634408
1 2025-03-14 13:31:00+00:00  197.37  197.79  197.21  197.32  313791
2 2025-03-14 13:32:00+00:00  197.29  197.59  197.00  197.38  342940
3 2025-03-14 13:33:00+00:00  197.33  197.69  197.00  197.45  245413
4 2025-03-14 13:34:00+00:00  197.43  197.88  197.38  197.54  178517
      Datetime   Open   High   Low  Close  Volume
0 2025-03-14 13:30:00+00:00  197.38  197.50  196.45  197.44  2.634408
1 2025-03-14 13:31:00+00:00  197.37  197.79  197.21  197.32  0.313791
2 2025-03-14 13:32:00+00:00  197.29  197.59  197.00  197.38  0.342940
3 2025-03-14 13:33:00+00:00  197.33  197.69  197.00  197.45  0.245413
4 2025-03-14 13:34:00+00:00  197.43  197.88  197.38  197.54  0.178517
      Datetime   Open   High   Low  Close  Volume
0 2025-03-14 09:30:00-04:00  197.38  197.50  196.45  197.44  2.634408

```

```

1 2025-03-14 09:31:00-04:00 197.37 197.79 197.21 197.32 0.313791
2 2025-03-14 09:32:00-04:00 197.29 197.59 197.00 197.38 0.342940
3 2025-03-14 09:33:00-04:00 197.33 197.69 197.00 197.45 0.245413
4 2025-03-14 09:34:00-04:00 197.43 197.88 197.38 197.54 0.178517
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMZN_2025-03-13.csv
ticker: AMZN
    Datetime      Open     High     Low    Close   Volume
0 2025-03-13 13:30:00+00:00 198.27 198.38 197.46 197.65 1461464
1 2025-03-13 13:31:00+00:00 197.62 198.66 197.62 198.51 152563
2 2025-03-13 13:32:00+00:00 198.48 198.88 198.39 198.41 141114
3 2025-03-13 13:33:00+00:00 198.44 198.44 197.34 197.40 146318
4 2025-03-13 13:34:00+00:00 197.40 197.78 197.19 197.75 148739
    Datetime      Open     High     Low    Close   Volume
0 2025-03-13 13:30:00+00:00 198.27 198.38 197.46 197.65 1.461464
1 2025-03-13 13:31:00+00:00 197.62 198.66 197.62 198.51 0.152563
2 2025-03-13 13:32:00+00:00 198.48 198.88 198.39 198.41 0.141114
3 2025-03-13 13:33:00+00:00 198.44 198.44 197.34 197.40 0.146318
4 2025-03-13 13:34:00+00:00 197.40 197.78 197.19 197.75 0.148739
    Datetime      Open     High     Low    Close   Volume
0 2025-03-13 09:30:00-04:00 198.27 198.38 197.46 197.65 1.461464
1 2025-03-13 09:31:00-04:00 197.62 198.66 197.62 198.51 0.152563
2 2025-03-13 09:32:00-04:00 198.48 198.88 198.39 198.41 0.141114
3 2025-03-13 09:33:00-04:00 198.44 198.44 197.34 197.40 0.146318
4 2025-03-13 09:34:00-04:00 197.40 197.78 197.19 197.75 0.148739
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMZN_2025-03-12.csv
ticker: AMZN
    Datetime      Open     High     Low    Close   Volume
0 2025-03-12 13:30:00+00:00 200.72 200.99 199.85 199.85 2889761
1 2025-03-12 13:31:00+00:00 199.87 201.29 199.80 201.12 475551
2 2025-03-12 13:32:00+00:00 201.11 201.37 200.28 200.68 374196
3 2025-03-12 13:33:00+00:00 200.69 201.38 200.46 201.12 0.336826
4 2025-03-12 13:34:00+00:00 201.07 201.52 200.43 200.46 328275
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

    Datetime      Open     High     Low    Close   Volume
0 2025-03-12 13:30:00+00:00 200.72 200.99 199.85 199.85 2.889761
1 2025-03-12 13:31:00+00:00 199.87 201.29 199.80 201.12 0.475551
2 2025-03-12 13:32:00+00:00 201.11 201.37 200.28 200.68 0.374196
3 2025-03-12 13:33:00+00:00 200.69 201.38 200.46 201.12 0.336826
4 2025-03-12 13:34:00+00:00 201.07 201.52 200.43 200.46 0.328275
    Datetime      Open     High     Low    Close   Volume
0 2025-03-12 09:30:00-04:00 200.72 200.99 199.85 199.85 2.889761
1 2025-03-12 09:31:00-04:00 199.87 201.29 199.80 201.12 0.475551
2 2025-03-12 09:32:00-04:00 201.11 201.37 200.28 200.68 0.374196
3 2025-03-12 09:33:00-04:00 200.69 201.38 200.46 201.12 0.336826
4 2025-03-12 09:34:00-04:00 201.07 201.52 200.43 200.46 0.328275
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column names: object

```

```

source_file: AMZN_2025-03-11.csv
ticker: AMZN
    Datetime      Open      High      Low     Close   Volume
0 2025-03-11 13:30:00+00:00  193.90  194.60  193.85  194.52  2648425
1 2025-03-11 13:31:00+00:00  194.52  195.43  194.45  195.01  229244
2 2025-03-11 13:32:00+00:00  194.98  195.49  194.75  195.32  171017
3 2025-03-11 13:33:00+00:00  195.31  195.70  195.04  195.57  222419
4 2025-03-11 13:34:00+00:00  195.61  195.76  195.18  195.65  183192
    Datetime      Open      High      Low     Close   Volume
0 2025-03-11 13:30:00+00:00  193.90  194.60  193.85  194.52  2.648425
1 2025-03-11 13:31:00+00:00  194.52  195.43  194.45  195.01  0.229244
2 2025-03-11 13:32:00+00:00  194.98  195.49  194.75  195.32  0.171017
3 2025-03-11 13:33:00+00:00  195.31  195.70  195.04  195.57  0.222419
4 2025-03-11 13:34:00+00:00  195.61  195.76  195.18  195.65  0.183192
    Datetime      Open      High      Low     Close   Volume
0 2025-03-11 09:30:00-04:00  193.90  194.60  193.85  194.52  2.648425
1 2025-03-11 09:31:00-04:00  194.52  195.43  194.45  195.01  0.229244
2 2025-03-11 09:32:00-04:00  194.98  195.49  194.75  195.32  0.171017
3 2025-03-11 09:33:00-04:00  195.31  195.70  195.04  195.57  0.222419
4 2025-03-11 09:34:00-04:00  195.61  195.76  195.18  195.65  0.183192
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMZN_2025-03-10.csv
ticker: AMZN
    Datetime      Open      High      Low     Close   Volume
0 2025-03-10 13:30:00+00:00  195.40  196.01  194.62  195.23  2233315
1 2025-03-10 13:31:00+00:00  195.21  196.33  194.64  196.06  320142
2 2025-03-10 13:32:00+00:00  196.07  196.07  195.08  195.68  237390
3 2025-03-10 13:33:00+00:00  195.65  195.65  194.89  195.35  219283
4 2025-03-10 13:34:00+00:00  195.36  195.93  195.11  195.77  267611
    Datetime      Open      High      Low     Close   Volume
0 2025-03-10 13:30:00+00:00  195.40  196.01  194.62  195.23  2.233315
1 2025-03-10 13:31:00+00:00  195.21  196.33  194.64  196.06  0.320142
2 2025-03-10 13:32:00+00:00  196.07  196.07  195.08  195.68  0.237390
3 2025-03-10 13:33:00+00:00  195.65  195.65  194.89  195.35  0.219283
4 2025-03-10 13:34:00+00:00  195.36  195.93  195.11  195.77  0.267611
    Datetime      Open      High      Low     Close   Volume
0 2025-03-10 09:30:00-04:00  195.40  196.01  194.62  195.23  2.233315
1 2025-03-10 09:31:00-04:00  195.21  196.33  194.64  196.06  0.320142
2 2025-03-10 09:32:00-04:00  196.07  196.07  195.08  195.68  0.237390
3 2025-03-10 09:33:00-04:00  195.65  195.65  194.89  195.35  0.219283
4 2025-03-10 09:34:00-04:00  195.36  195.93  195.11  195.77  0.267611
resampling to: 1T
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
'T' is deprecated and will be removed in a future version, please use 'min' instead.

merged_df:
    Datetime      Open      High      Low     Close   Volume   TR \
0 2025-03-14 09:30:00-04:00  197.38  197.50  196.45  197.44  2.63  1.05
1 2025-03-14 09:31:00-04:00  197.37  197.79  197.21  197.32  0.31  0.58
2 2025-03-14 09:32:00-04:00  197.29  197.59  197.00  197.38  0.34  0.59
3 2025-03-14 09:33:00-04:00  197.33  197.69  197.00  197.45  0.25  0.69
4 2025-03-14 09:34:00-04:00  197.43  197.88  197.38  197.54  0.18  0.50

```

```
    ATR      vwap
0  NaN  197.44
1  NaN  197.43
2  NaN  197.42
3  NaN  197.42
4  0.68  197.43
2025-03-10
```

```
   Datetime   Open   High    Low  Close  Volume    TR     ATR      vwap
0 2025-03-10 195.40 196.01 194.62 195.23  2.23  1.39  NaN  195.23
1 2025-03-10 195.21 196.33 194.64 196.06  0.32  1.69  NaN  195.33
2 2025-03-10 196.07 196.07 195.08 195.68  0.24  0.99  NaN  195.36
3 2025-03-10 195.65 195.65 194.89 195.35  0.22  0.79  NaN  195.36
4 2025-03-10 195.36 195.93 195.11 195.77  0.27  0.82  1.14  195.40
```

saving as: stock_information/htmlplot/AMZN-2025-03-10.html

AMZN - 2025-03-10



10:00
Mar 10, 2025

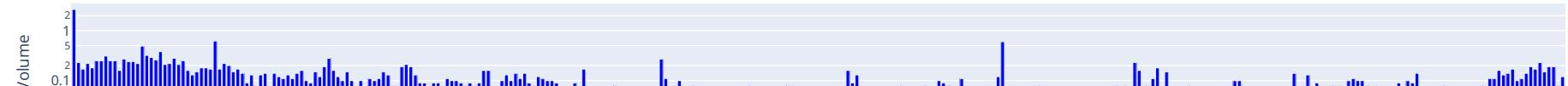
1

2025-03-11

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	193.90	194.60	193.85	194.52	2.65	0.75	NaN	194.52
1	2025-03-11 09:31:00-04:00	194.52	195.43	194.45	195.01	0.23	0.98	NaN	194.56
2	2025-03-11 09:32:00-04:00	194.98	195.49	194.75	195.32	0.17	0.74	NaN	194.60
3	2025-03-11 09:33:00-04:00	195.31	195.70	195.04	195.57	0.22	0.66	NaN	194.67
4	2025-03-11 09:34:00-04:00	195.61	195.76	195.18	195.65	0.18	0.58	0.74	194.72

saving as: stock_information/htmlplot/AMZN-2025-03-11.html

AMZN - 2025-03-11



True Range



Mar 11, 2025

2025-03-12

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-12 09:30:00-04:00	200.72	200.99	199.85	199.85	2.89	1.14	NaN	199.85
1	2025-03-12 09:31:00-04:00	199.87	201.29	199.80	201.12	0.48	1.49	NaN	200.03
2	2025-03-12 09:32:00-04:00	201.11	201.37	200.28	200.68	0.37	1.09	NaN	200.09
3	2025-03-12 09:33:00-04:00	200.69	201.38	200.46	201.12	0.34	0.92	NaN	200.18
4	2025-03-12 09:34:00-04:00	201.07	201.52	200.43	200.46	0.33	1.09	1.15	200.20

saving as: stock_information/htmlplot/AMZN-2025-03-12.html

AMZN - 2025-03-12



2025-03-13

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	198.27	198.38	197.46	197.65	1.46	0.92	NaN	197.65
1	2025-03-13 09:31:00-04:00	197.62	198.66	197.62	198.51	0.15	1.04	NaN	197.73
2	2025-03-13 09:32:00-04:00	198.48	198.88	198.39	198.41	0.14	0.49	NaN	197.79
3	2025-03-13 09:33:00-04:00	198.44	198.44	197.34	197.40	0.15	1.10	NaN	197.76
4	2025-03-13 09:34:00-04:00	197.40	197.78	197.19	197.75	0.15	0.59	0.83	197.76

saving as: stock_information/htmlplot/AMZN-2025-03-13.html

AMZN - 2025-03-13



2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	197.38	197.50	196.45	197.44	2.63	1.05	NaN	197.44
1	2025-03-14 09:31:00-04:00	197.37	197.79	197.21	197.32	0.31	0.58	NaN	197.43
2	2025-03-14 09:32:00-04:00	197.29	197.59	197.00	197.38	0.34	0.59	NaN	197.42
3	2025-03-14 09:33:00-04:00	197.33	197.69	197.00	197.45	0.25	0.69	NaN	197.42
4	2025-03-14 09:34:00-04:00	197.43	197.88	197.38	197.54	0.18	0.50	0.68	197.43

saving as: stock_information/htmlplot/AMZN-2025-03-14.html

AMZN - 2025-03-14



```

file_list: ['AMD_2025-03-14.csv', 'AMD_2025-03-13.csv', 'AMD_2025-03-12.csv', 'AMD_2025-03-11.csv', 'AMD_2025-03-10.csv']
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMD_2025-03-14.csv
ticker: AMD
    Datetime   Open   High   Low  Close  Volume
0 2025-03-14 13:30:00+00:00  100.24 100.24 100.24 100.24  878056
1 2025-03-14 13:31:00+00:00  100.20 100.34 100.00 100.09 189721
2 2025-03-14 13:32:00+00:00  100.05 100.31 100.03 100.16 155725
3 2025-03-14 13:33:00+00:00  100.15 100.60 100.11 100.59 241612
4 2025-03-14 13:34:00+00:00  100.55 100.60 99.93 100.12 125661
    Datetime   Open   High   Low  Close  Volume
0 2025-03-14 13:30:00+00:00  100.24 100.24 100.24 100.24  0.878056
1 2025-03-14 13:31:00+00:00  100.20 100.34 100.00 100.09 0.189721
2 2025-03-14 13:32:00+00:00  100.05 100.31 100.03 100.16 0.155725
3 2025-03-14 13:33:00+00:00  100.15 100.60 100.11 100.59 0.241612
4 2025-03-14 13:34:00+00:00  100.55 100.60 99.93 100.12 0.125661
    Datetime   Open   High   Low  Close  Volume
0 2025-03-14 09:30:00-04:00  100.24 100.24 100.24 100.24  0.878056
1 2025-03-14 09:31:00-04:00  100.20 100.34 100.00 100.09 0.189721
2 2025-03-14 09:32:00-04:00  100.05 100.31 100.03 100.16 0.155725
3 2025-03-14 09:33:00-04:00  100.15 100.60 100.11 100.59 0.241612
4 2025-03-14 09:34:00-04:00  100.55 100.60 99.93 100.12 0.125661
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMD_2025-03-13.csv
ticker: AMD
    Datetime   Open   High   Low  Close  Volume
0 2025-03-13 13:30:00+00:00  99.63 99.70 99.02 99.15 1355575
1 2025-03-13 13:31:00+00:00  99.07 99.48 98.97 99.23 255299
2 2025-03-13 13:32:00+00:00  99.27 99.65 99.23 99.49 144228
3 2025-03-13 13:33:00+00:00  99.51 99.53 99.00 99.40 185070
4 2025-03-13 13:34:00+00:00  99.35 99.76 99.30 99.53 157868
    Datetime   Open   High   Low  Close  Volume
0 2025-03-13 13:30:00+00:00  99.63 99.70 99.02 99.15 1.355575
1 2025-03-13 13:31:00+00:00  99.07 99.48 98.97 99.23 0.255299
2 2025-03-13 13:32:00+00:00  99.27 99.65 99.23 99.49 0.144228
3 2025-03-13 13:33:00+00:00  99.51 99.53 99.00 99.40 0.185070
4 2025-03-13 13:34:00+00:00  99.35 99.76 99.30 99.53 0.157868
    Datetime   Open   High   Low  Close  Volume
0 2025-03-13 09:30:00-04:00  99.63 99.70 99.02 99.15 1.355575
1 2025-03-13 09:31:00-04:00  99.07 99.48 98.97 99.23 0.255299
2 2025-03-13 09:32:00-04:00  99.27 99.65 99.23 99.49 0.144228
3 2025-03-13 09:33:00-04:00  99.51 99.53 99.00 99.40 0.185070
4 2025-03-13 09:34:00-04:00  99.35 99.76 99.30 99.53 0.157868
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMD_2025-03-12.csv
ticker: AMD
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00  99.04 99.05 98.50 98.69 1418446
1 2025-03-12 13:31:00+00:00  98.68 99.39 98.65 98.99 177772
2 2025-03-12 13:32:00+00:00  98.97 99.40 98.88 99.35 135450
3 2025-03-12 13:33:00+00:00  99.36 99.74 99.36 99.71 196613
4 2025-03-12 13:34:00+00:00  99.72 99.76 99.20 99.39 138601
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 13:30:00+00:00  99.04 99.05 98.50 98.69 1.418446
1 2025-03-12 13:31:00+00:00  98.68 99.39 98.65 98.99 0.177772
2 2025-03-12 13:32:00+00:00  98.97 99.40 98.88 99.35 0.135450

```

```

3 2025-03-12 13:33:00+00:00 99.36 99.74 99.36 99.71 0.196613
4 2025-03-12 13:34:00+00:00 99.72 99.76 99.20 99.39 0.138601
    Datetime   Open   High   Low  Close  Volume
0 2025-03-12 09:30:00-04:00 99.04 99.05 98.50 98.69 1.418446
1 2025-03-12 09:31:00-04:00 98.68 99.39 98.65 98.99 0.177772
2 2025-03-12 09:32:00-04:00 98.97 99.40 98.88 99.35 0.135450
3 2025-03-12 09:33:00-04:00 99.36 99.74 99.36 99.71 0.196613
4 2025-03-12 09:34:00-04:00 99.72 99.76 99.20 99.39 0.138601
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMD_2025-03-11.csv
ticker: AMD
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 96.82 97.39 96.62 97.18 1643230
1 2025-03-11 13:31:00+00:00 97.21 97.56 97.05 97.55 119461
2 2025-03-11 13:32:00+00:00 97.51 97.73 97.23 97.47 119870
3 2025-03-11 13:33:00+00:00 97.49 97.57 97.11 97.33 109587
4 2025-03-11 13:34:00+00:00 97.36 97.54 96.81 97.11 138815
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 13:30:00+00:00 96.82 97.39 96.62 97.18 1.643230
1 2025-03-11 13:31:00+00:00 97.21 97.56 97.05 97.55 0.119461
2 2025-03-11 13:32:00+00:00 97.51 97.73 97.23 97.47 0.119870
3 2025-03-11 13:33:00+00:00 97.49 97.57 97.11 97.33 0.109587
4 2025-03-11 13:34:00+00:00 97.36 97.54 96.81 97.11 0.138815
    Datetime   Open   High   Low  Close  Volume
0 2025-03-11 09:30:00-04:00 96.82 97.39 96.62 97.18 1.643230
1 2025-03-11 09:31:00-04:00 97.21 97.56 97.05 97.55 0.119461
2 2025-03-11 09:32:00-04:00 97.51 97.73 97.23 97.47 0.119870
3 2025-03-11 09:33:00-04:00 97.49 97.57 97.11 97.33 0.109587
4 2025-03-11 09:34:00-04:00 97.36 97.54 96.81 97.11 0.138815
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: AMD_2025-03-10.csv
ticker: AMD
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00 98.57 98.88 98.28 98.60 992403
1 2025-03-10 13:31:00+00:00 98.62 98.84 98.42 98.67 119684
2 2025-03-10 13:32:00+00:00 98.64 98.81 98.41 98.54 111388
3 2025-03-10 13:33:00+00:00 98.48 98.72 98.41 98.58 105685
4 2025-03-10 13:34:00+00:00 98.61 98.97 98.59 98.96 114459
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 13:30:00+00:00 98.57 98.88 98.28 98.60 0.992403
1 2025-03-10 13:31:00+00:00 98.62 98.84 98.42 98.67 0.119684
2 2025-03-10 13:32:00+00:00 98.64 98.81 98.41 98.54 0.111388
3 2025-03-10 13:33:00+00:00 98.48 98.72 98.41 98.58 0.105685
4 2025-03-10 13:34:00+00:00 98.61 98.97 98.59 98.96 0.114459
    Datetime   Open   High   Low  Close  Volume
0 2025-03-10 09:30:00-04:00 98.57 98.88 98.28 98.60 0.992403
1 2025-03-10 09:31:00-04:00 98.62 98.84 98.42 98.67 0.119684
2 2025-03-10 09:32:00-04:00 98.64 98.81 98.41 98.54 0.111388
3 2025-03-10 09:33:00-04:00 98.48 98.72 98.41 98.58 0.105685
4 2025-03-10 09:34:00-04:00 98.61 98.97 98.59 98.96 0.114459
resampling to: 1T
merged_df:          Datetime   Open   High   Low  Close  Volume   TR \
0 2025-03-14 09:30:00-04:00 100.24 100.24 100.24 100.24 0.88  0.00
1 2025-03-14 09:31:00-04:00 100.20 100.34 100.00 100.09 0.19  0.34
2 2025-03-14 09:32:00-04:00 100.05 100.31 100.03 100.16 0.16  0.28
3 2025-03-14 09:33:00-04:00 100.15 100.60 100.11 100.59 0.24  0.49
4 2025-03-14 09:34:00-04:00 100.55 100.60 99.93 100.12 0.13  0.67

```

```

      ATR      vwap
0   NaN  100.24
1   NaN  100.21
2   NaN  100.21
3   NaN  100.27
4   0.36  100.26
2025-03-10
          Datetime  Open  High   Low Close  Volume    TR     ATR      vwap
0 2025-03-10 09:30:00-04:00  98.57 98.88 98.28 98.60  0.99  0.60  NaN  98.60
1 2025-03-10 09:31:00-04:00  98.62 98.84 98.42 98.67  0.12  0.42  NaN  98.61
2 2025-03-10 09:32:00-04:00  98.64 98.81 98.41 98.54  0.11  0.40  NaN  98.60
3 2025-03-10 09:33:00-04:00  98.48 98.72 98.41 98.58  0.11  0.31  NaN  98.60
4 2025-03-10 09:34:00-04:00  98.61 98.97 98.59 98.96  0.11  0.39  0.42  98.63
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:

```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

'T' is deprecated and will be removed in a future version, please use 'min' instead.

saving as: stock_information/htmlplot/AMD-2025-03-10.html

AMD - 2025-03-10





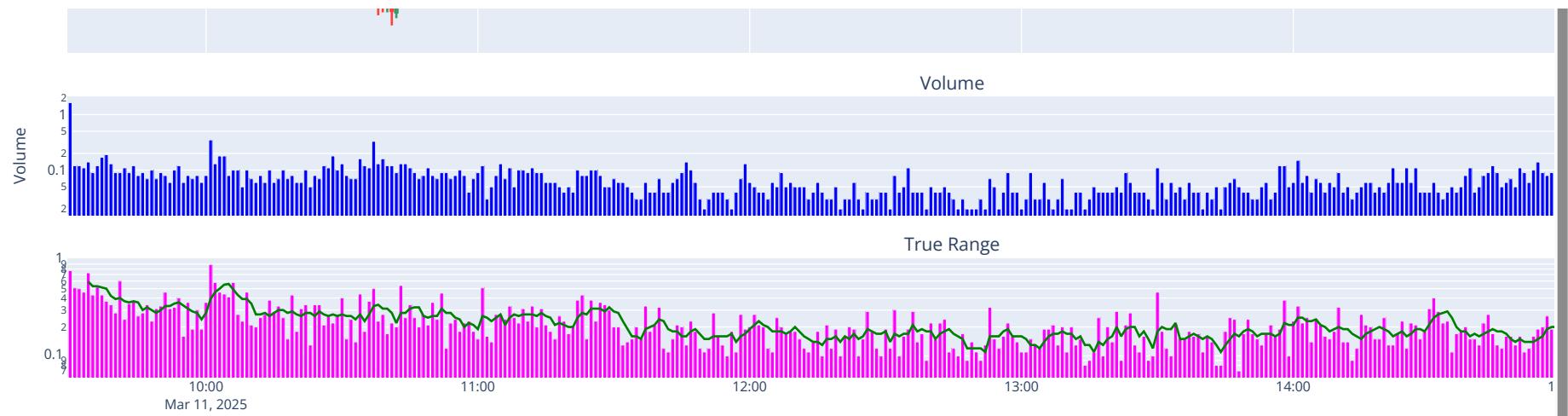
2025-03-11

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	96.82	97.39	96.62	97.18	1.64	0.77	NaN	97.18
1	2025-03-11 09:31:00-04:00	97.21	97.56	97.05	97.55	0.12	0.51	NaN	97.21
2	2025-03-11 09:32:00-04:00	97.51	97.73	97.23	97.47	0.12	0.50	NaN	97.22
3	2025-03-11 09:33:00-04:00	97.49	97.57	97.11	97.33	0.11	0.46	NaN	97.23
4	2025-03-11 09:34:00-04:00	97.36	97.54	96.81	97.11	0.14	0.73	0.59	97.22

saving as: stock_information/htmlplot/AMD-2025-03-11.html

AMD - 2025-03-11

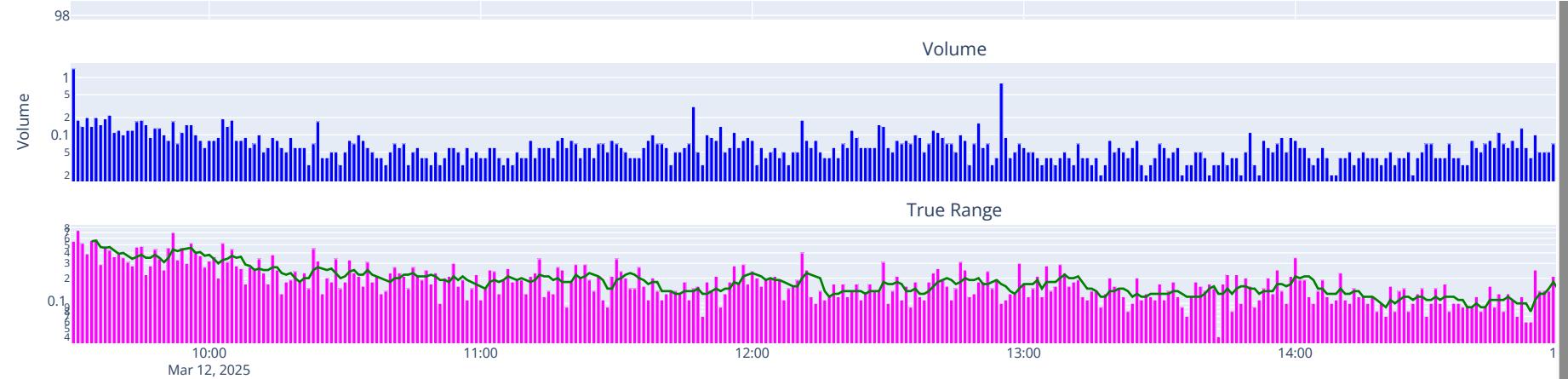




```
2025-03-12
Datetime  Open  High   Low  Close  Volume  TR    ATR  vwap
0 2025-03-12 09:30:00-04:00 99.04 99.05 98.50 98.69  1.42  0.55  NaN 98.69
1 2025-03-12 09:31:00-04:00 98.68 99.39 98.65 98.99  0.18  0.74  NaN 98.72
2 2025-03-12 09:32:00-04:00 98.97 99.40 98.88 99.35  0.14  0.52  NaN 98.77
3 2025-03-12 09:33:00-04:00 99.36 99.74 99.36 99.71  0.20  0.39  NaN 98.87
4 2025-03-12 09:34:00-04:00 99.72 99.76 99.20 99.39  0.14  0.56  0.55 98.90
saving as: stock_information/htmlplot/AMD-2025-03-12.html
```

AMD - 2025-03-12





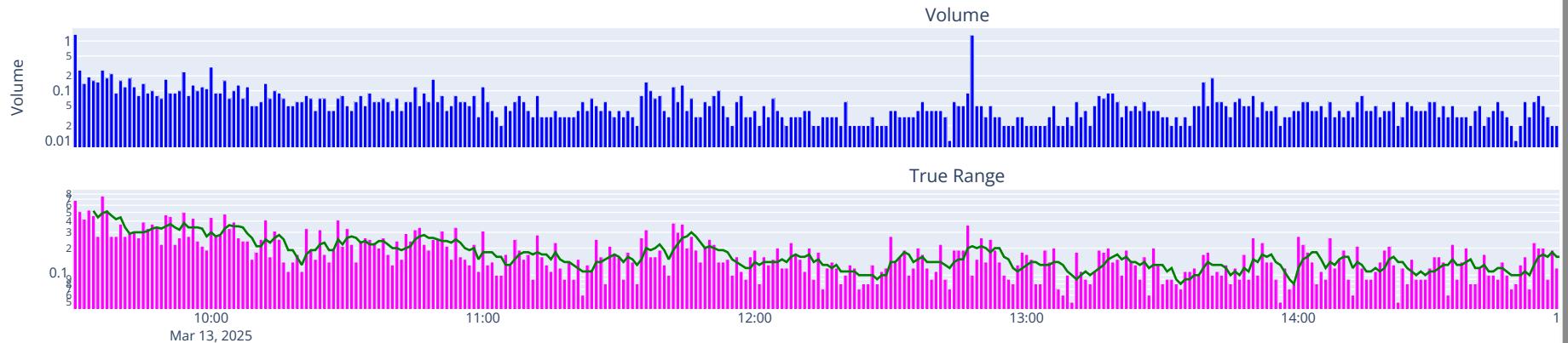
2025-03-13

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	99.63	99.70	99.02	99.15	1.36	0.68	NaN	99.15
1	2025-03-13 09:31:00-04:00	99.07	99.48	98.97	99.23	0.26	0.51	NaN	99.16
2	2025-03-13 09:32:00-04:00	99.27	99.65	99.23	99.49	0.14	0.42	NaN	99.19
3	2025-03-13 09:33:00-04:00	99.51	99.53	99.00	99.40	0.19	0.53	NaN	99.21
4	2025-03-13 09:34:00-04:00	99.35	99.76	99.30	99.53	0.16	0.46	0.52	99.23

saving as: stock_information/htmlplot/AMD-2025-03-13.html

AMD - 2025-03-13



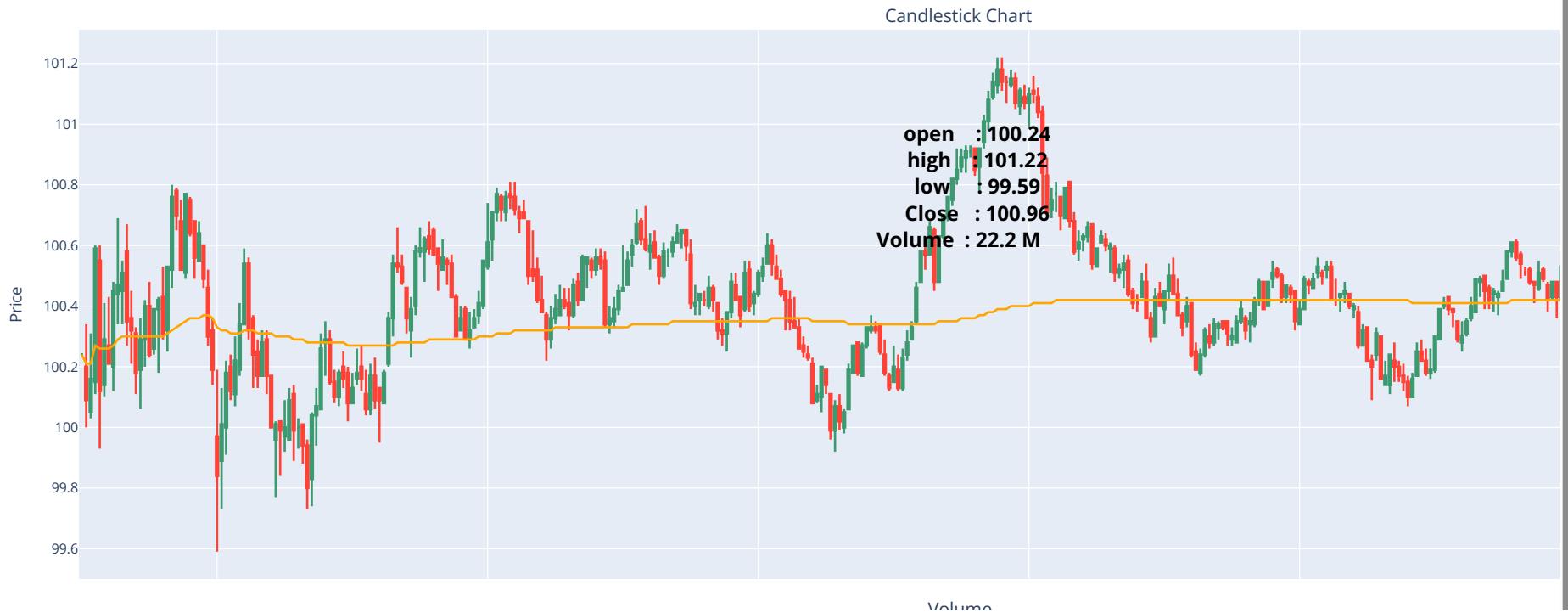


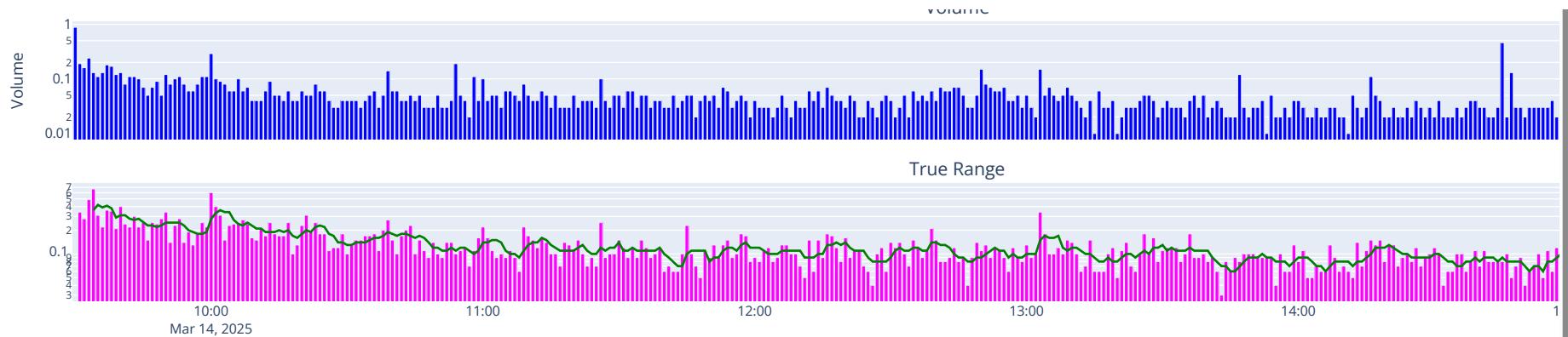
2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	100.24	100.24	100.24	100.24	0.88	0.00	NaN	100.24
1	2025-03-14 09:31:00-04:00	100.20	100.34	100.00	100.09	0.19	0.34	NaN	100.21
2	2025-03-14 09:32:00-04:00	100.05	100.31	100.03	100.16	0.16	0.28	NaN	100.21
3	2025-03-14 09:33:00-04:00	100.15	100.60	100.11	100.59	0.24	0.49	NaN	100.27
4	2025-03-14 09:34:00-04:00	100.55	100.60	99.93	100.12	0.13	0.67	0.36	100.26

saving as: stock_information/htmlplot/AMD-2025-03-14.html

AMD - 2025-03-14





```
file_list: ['MSTR_2025-03-14.csv', 'MSTR_2025-03-13.csv', 'MSTR_2025-03-12.csv', 'MSTR_2025-03-11.csv', 'MSTR_2025-03-10.csv']
```

```
working with get_atr_vwap
```

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
```

```
source_file: MSTR_2025-03-14.csv
```

```
ticker: MSTR
```

	Datetime	Open	High	Low	Close	Volume
0	2025-03-14 13:30:00+00:00	274.40	274.70	272.63	274.23	663127
1	2025-03-14 13:31:00+00:00	274.22	277.69	273.71	276.61	183269
2	2025-03-14 13:32:00+00:00	276.44	279.50	275.61	278.66	160305
3	2025-03-14 13:33:00+00:00	278.73	279.67	278.48	278.92	184360
4	2025-03-14 13:34:00+00:00	278.94	279.64	278.15	279.20	131869

	Datetime	Open	High	Low	Close	Volume
0	2025-03-14 13:30:00+00:00	274.40	274.70	272.63	274.23	0.663127
1	2025-03-14 13:31:00+00:00	274.22	277.69	273.71	276.61	0.183269
2	2025-03-14 13:32:00+00:00	276.44	279.50	275.61	278.66	0.160305
3	2025-03-14 13:33:00+00:00	278.73	279.67	278.48	278.92	0.184360
4	2025-03-14 13:34:00+00:00	278.94	279.64	278.15	279.20	0.131869

	Datetime	Open	High	Low	Close	Volume
0	2025-03-14 09:30:00-04:00	274.40	274.70	272.63	274.23	0.663127
1	2025-03-14 09:31:00-04:00	274.22	277.69	273.71	276.61	0.183269
2	2025-03-14 09:32:00-04:00	276.44	279.50	275.61	278.66	0.160305
3	2025-03-14 09:33:00-04:00	278.73	279.67	278.48	278.92	0.184360
4	2025-03-14 09:34:00-04:00	278.94	279.64	278.15	279.20	0.131869

```
resampling to: 1T
```

```
working with get_atr_vwap
```

```
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
```

```
column_names: object
```

```
source_file: MSTR_2025-03-13.csv
```

```
ticker: MSTR
```

	Datetime	Open	High	Low	Close	Volume
0	2025-03-13 13:30:00+00:00	262.0	265.72	262.00	264.32	726683
1	2025-03-13 13:31:00+00:00	264.2	266.24	263.89	265.52	116913
2	2025-03-13 13:32:00+00:00	265.5	266.45	265.00	265.68	78526
3	2025-03-13 13:33:00+00:00	266.0	266.00	263.66	264.06	98250
4	2025-03-13 13:34:00+00:00	263.9	266.96	263.05	266.30	90613

	Datetime	Open	High	Low	Close	Volume
0	2025-03-13 13:30:00+00:00	262.0	265.72	262.00	264.32	0.726683
1	2025-03-13 13:31:00+00:00	264.2	266.24	263.89	265.52	0.116913
2	2025-03-13 13:32:00+00:00	265.5	266.45	265.00	265.68	0.078526
3	2025-03-13 13:33:00+00:00	266.0	266.00	263.66	264.06	0.098250
4	2025-03-13 13:34:00+00:00	263.9	266.96	263.05	266.30	0.090613

	Datetime	Open	High	Low	Close	Volume
0	2025-03-13 09:30:00-04:00	262.0	265.72	262.00	264.32	0.726683
1	2025-03-13 09:31:00-04:00	264.2	266.24	263.89	265.52	0.116913

```

1 2025-03-13 09:32:00-04:00 265.5 266.45 265.00 265.68 0.078526
2 2025-03-13 09:33:00-04:00 266.0 266.00 263.66 264.06 0.098250
3 2025-03-13 09:34:00-04:00 263.9 266.96 263.05 266.30 0.090613
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: MSTR_2025-03-12.csv
ticker: MSTR
      Datetime    Open    High     Low    Close   Volume
0 2025-03-12 13:30:00+00:00 264.40 267.49 264.01 266.21 1170726
1 2025-03-12 13:31:00+00:00 266.00 267.49 265.20 266.27 74431
2 2025-03-12 13:32:00+00:00 266.20 269.77 265.40 267.76 91402
3 2025-03-12 13:33:00+00:00 267.99 269.00 267.80 268.57 69320
4 2025-03-12 13:34:00+00:00 268.41 268.74 265.90 267.00 67516
      Datetime    Open    High     Low    Close   Volume
0 2025-03-12 13:30:00+00:00 264.40 267.49 264.01 266.21 1.170726
1 2025-03-12 13:31:00+00:00 266.00 267.49 265.20 266.27 0.074431
2 2025-03-12 13:32:00+00:00 266.20 269.77 265.40 267.76 0.091402
3 2025-03-12 13:33:00+00:00 267.99 269.00 267.80 268.57 0.069320
4 2025-03-12 13:34:00+00:00 268.41 268.74 265.90 267.00 0.067516
      Datetime    Open    High     Low    Close   Volume
0 2025-03-12 09:30:00-04:00 264.40 267.49 264.01 266.21 1.170726
1 2025-03-12 09:31:00-04:00 266.00 267.49 265.20 266.27 0.074431
2 2025-03-12 09:32:00-04:00 266.20 269.77 265.40 267.76 0.091402
3 2025-03-12 09:33:00-04:00 267.99 269.00 267.80 268.57 0.069320
4 2025-03-12 09:34:00-04:00 268.41 268.74 265.90 267.00 0.067516
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: MSTR_2025-03-11.csv
ticker: MSTR
      Datetime    Open    High     Low    Close   Volume
0 2025-03-11 13:30:00+00:00 244.44 247.45 243.55 246.43 1212929
1 2025-03-11 13:31:00+00:00 246.80 247.39 242.40 243.13 108051
2 2025-03-11 13:32:00+00:00 242.98 243.59 240.66 241.73 127388
3 2025-03-11 13:33:00+00:00 241.75 244.00 241.38 243.00 80166
4 2025-03-11 13:34:00+00:00 242.62 242.89 240.21 241.58 86977
      Datetime    Open    High     Low    Close   Volume
0 2025-03-11 13:30:00+00:00 244.44 247.45 243.55 246.43 1.212929
1 2025-03-11 13:31:00+00:00 246.80 247.39 242.40 243.13 0.108051
2 2025-03-11 13:32:00+00:00 242.98 243.59 240.66 241.73 0.127388
3 2025-03-11 13:33:00+00:00 241.75 244.00 241.38 243.00 0.080166
4 2025-03-11 13:34:00+00:00 242.62 242.89 240.21 241.58 0.086977
      Datetime    Open    High     Low    Close   Volume
0 2025-03-11 09:30:00-04:00 244.44 247.45 243.55 246.43 1.212929
1 2025-03-11 09:31:00-04:00 246.80 247.39 242.40 243.13 0.108051
2 2025-03-11 09:32:00-04:00 242.98 243.59 240.66 241.73 0.127388
3 2025-03-11 09:33:00-04:00 241.75 244.00 241.38 243.00 0.080166
4 2025-03-11 09:34:00-04:00 242.62 242.89 240.21 241.58 0.086977
resampling to: 1T
working with get_atr_vwap
column_names: Index(['Datetime', 'Open', 'High', 'Low', 'Close', 'Volume'], dtype='object')
column_names: object
source_file: MSTR_2025-03-10.csv
ticker: MSTR
      Datetime    Open    High     Low    Close   Volume
0 2025-03-10 13:30:00+00:00 267.58 268.89 266.20 267.98 1376619
1 2025-03-10 13:31:00+00:00 268.08 272.00 267.82 271.22 113682
2 2025-03-10 13:32:00+00:00 270.63 270.63 261.83 263.44 248387
3 2025-03-10 13:33:00+00:00 263.12 263.20 261.00 261.21 138744
4 2025-03-10 13:34:00+00:00 261.21 263.07 260.31 261.49 131758

```

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

```
'T' is deprecated and will be removed in a future version, please use 'min' instead.
```

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

```
'T' is deprecated and will be removed in a future version, please use 'min' instead.
```

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

```
'T' is deprecated and will be removed in a future version, please use 'min' instead.
```

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

```
'T' is deprecated and will be removed in a future version, please use 'min' instead.
```

```
<ipython-input-11-8a5c6a9af0a6>:44: FutureWarning:
```

```
'T' is deprecated and will be removed in a future version, please use 'min' instead.
```

```
Datetime      Open     High      Low     Close    Volume
```

```
0 2025-03-10 13:30:00+00:00 267.58 268.89 266.20 267.98 1.376619  
1 2025-03-10 13:31:00+00:00 268.08 272.00 267.82 271.22 0.113682  
2 2025-03-10 13:32:00+00:00 270.63 270.63 261.83 263.44 0.248387  
3 2025-03-10 13:33:00+00:00 263.12 263.20 261.00 261.21 0.138744  
4 2025-03-10 13:34:00+00:00 261.21 263.07 260.31 261.49 0.131758
```

```
Datetime      Open     High      Low     Close    Volume
```

```
0 2025-03-10 09:30:00-04:00 267.58 268.89 266.20 267.98 1.376619  
1 2025-03-10 09:31:00-04:00 268.08 272.00 267.82 271.22 0.113682  
2 2025-03-10 09:32:00-04:00 270.63 270.63 261.83 263.44 0.248387  
3 2025-03-10 09:33:00-04:00 263.12 263.20 261.00 261.21 0.138744  
4 2025-03-10 09:34:00-04:00 261.21 263.07 260.31 261.49 0.131758
```

```
resampling to: 1T
```

```
merged_df:          Datetime      Open     High      Low     Close    Volume    TR \\\n0 2025-03-14 09:30:00-04:00 274.40 274.70 272.63 274.23  0.66  2.07\n1 2025-03-14 09:31:00-04:00 274.22 277.69 273.71 276.61  0.18  3.98\n2 2025-03-14 09:32:00-04:00 276.44 279.50 275.61 278.66  0.16  3.89\n3 2025-03-14 09:33:00-04:00 278.73 279.67 278.48 278.92  0.18  1.19\n4 2025-03-14 09:34:00-04:00 278.94 279.64 278.15 279.20  0.13  1.49
```

```
ATR      vwap
```

```
0   NaN  274.23\n1   NaN  274.75\n2   NaN  275.37\n3   NaN  275.92\n4  2.52  276.25
```

```
2025-03-10
```

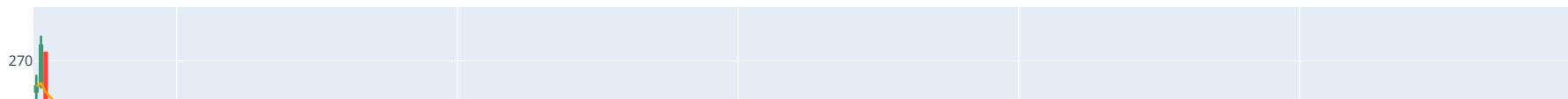
```
Datetime      Open     High      Low     Close    Volume    TR      ATR      vwap
```

```
0 2025-03-10 09:30:00-04:00 267.58 268.89 266.20 267.98  1.38  2.69  NaN  267.98\n1 2025-03-10 09:31:00-04:00 268.08 272.00 267.82 271.22  0.11  4.18  NaN  268.23\n2 2025-03-10 09:32:00-04:00 270.63 270.63 261.83 263.44  0.25  9.39  NaN  267.54\n3 2025-03-10 09:33:00-04:00 263.12 263.20 261.00 261.21  0.14  2.44  NaN  267.08\n4 2025-03-10 09:34:00-04:00 261.21 263.07 260.31 261.49  0.13  2.76  4.29  266.71
```

```
saving as: stock_information/htmlplot/MSTR-2025-03-10.html
```

MSTR - 2025-03-10

Candlestick Chart





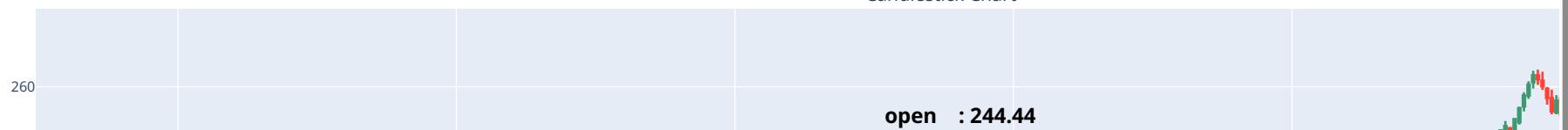
2025-03-11

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-11 09:30:00-04:00	244.44	247.45	243.55	246.43	1.21	3.90	NaN	246.43
1	2025-03-11 09:31:00-04:00	246.80	247.39	242.40	243.13	0.11	4.99	NaN	246.16
2	2025-03-11 09:32:00-04:00	242.98	243.59	240.66	241.73	0.13	2.93	NaN	245.77
3	2025-03-11 09:33:00-04:00	241.75	244.00	241.38	243.00	0.08	2.62	NaN	245.63
4	2025-03-11 09:34:00-04:00	242.62	242.89	240.21	241.58	0.09	2.79	3.45	245.41

saving as: stock_information/htmlplot/MSTR-2025-03-11.html

MSTR - 2025-03-11

Candlestick Chart





2025-03-12

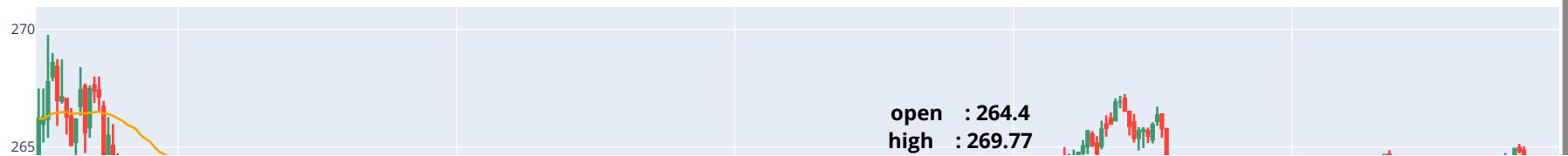
	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-12 09:30:00-04:00	264.40	267.49	264.01	266.21	1.17	3.48	NaN	266.21
1	2025-03-12 09:31:00-04:00	266.00	267.49	265.20	266.27	0.07	2.29	NaN	266.21
2	2025-03-12 09:32:00-04:00	266.20	269.77	265.40	267.76	0.09	4.37	NaN	266.32
3	2025-03-12 09:33:00-04:00	267.99	269.00	267.80	268.57	0.07	1.24	NaN	266.43
4	2025-03-12 09:34:00-04:00	268.41	268.74	265.90	267.00	0.07	2.84	2.84	266.46

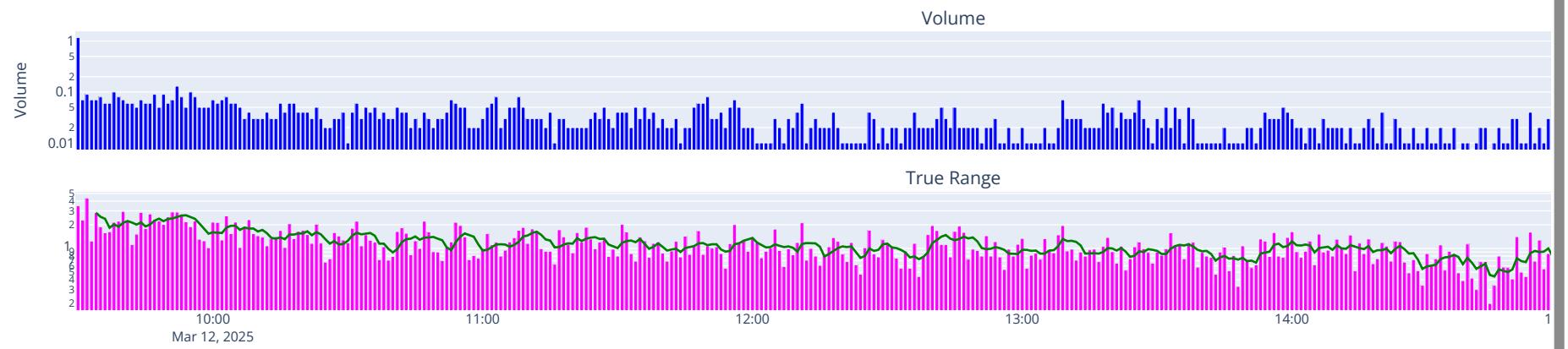
saving as: stock_information/htmlplot/MSTR-2025-03-12.html

MSTR - 2025-03-12

Candlestick Chart

open : 264.4
high : 269.77





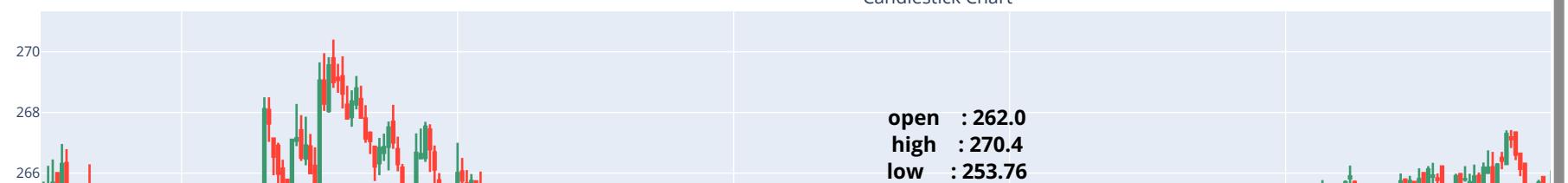
2025-03-13

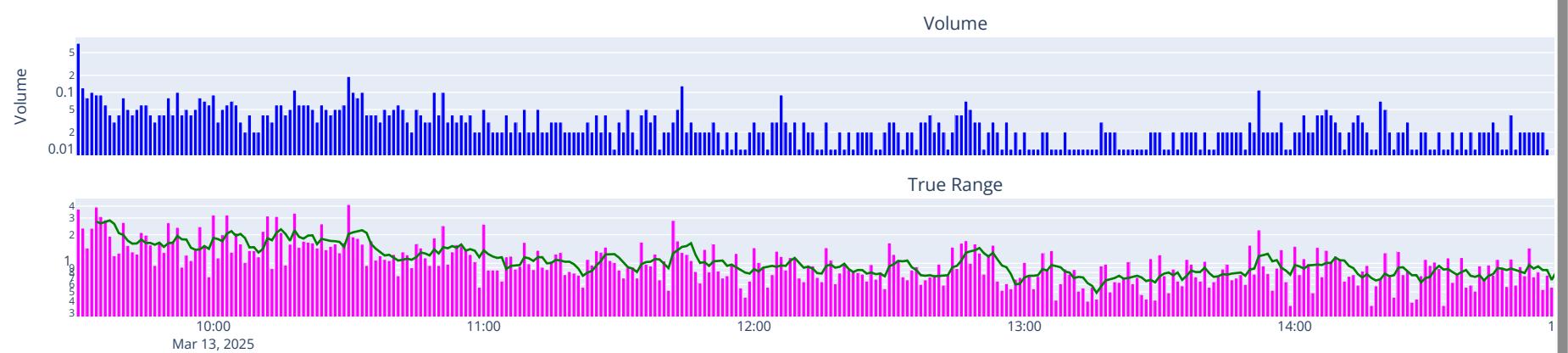
	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-13 09:30:00-04:00	262.0	265.72	262.00	264.32	0.73	3.72	NaN	264.32
1	2025-03-13 09:31:00-04:00	264.2	266.24	263.89	265.52	0.12	2.35	NaN	264.49
2	2025-03-13 09:32:00-04:00	265.5	266.45	265.00	265.68	0.08	1.45	NaN	264.59
3	2025-03-13 09:33:00-04:00	266.0	266.00	263.66	264.06	0.10	2.34	NaN	264.54
4	2025-03-13 09:34:00-04:00	263.9	266.96	263.05	266.30	0.09	3.91	2.75	264.68

saving as: stock_information/htmlplot/MSTR-2025-03-13.html

MSTR - 2025-03-13

Candlestick Chart





2025-03-14

	Datetime	Open	High	Low	Close	Volume	TR	ATR	vwap
0	2025-03-14 09:30:00-04:00	274.40	274.70	272.63	274.23	0.66	2.07	NaN	274.23
1	2025-03-14 09:31:00-04:00	274.22	277.69	273.71	276.61	0.18	3.98	NaN	274.75
2	2025-03-14 09:32:00-04:00	276.44	279.50	275.61	278.66	0.16	3.89	NaN	275.37
3	2025-03-14 09:33:00-04:00	278.73	279.67	278.48	278.92	0.18	1.19	NaN	275.92
4	2025-03-14 09:34:00-04:00	278.94	279.64	278.15	279.20	0.13	1.49	2.52	276.25

saving as: stock_information/htmlplot/MSTR-2025-03-14.html

MSTR - 2025-03-14





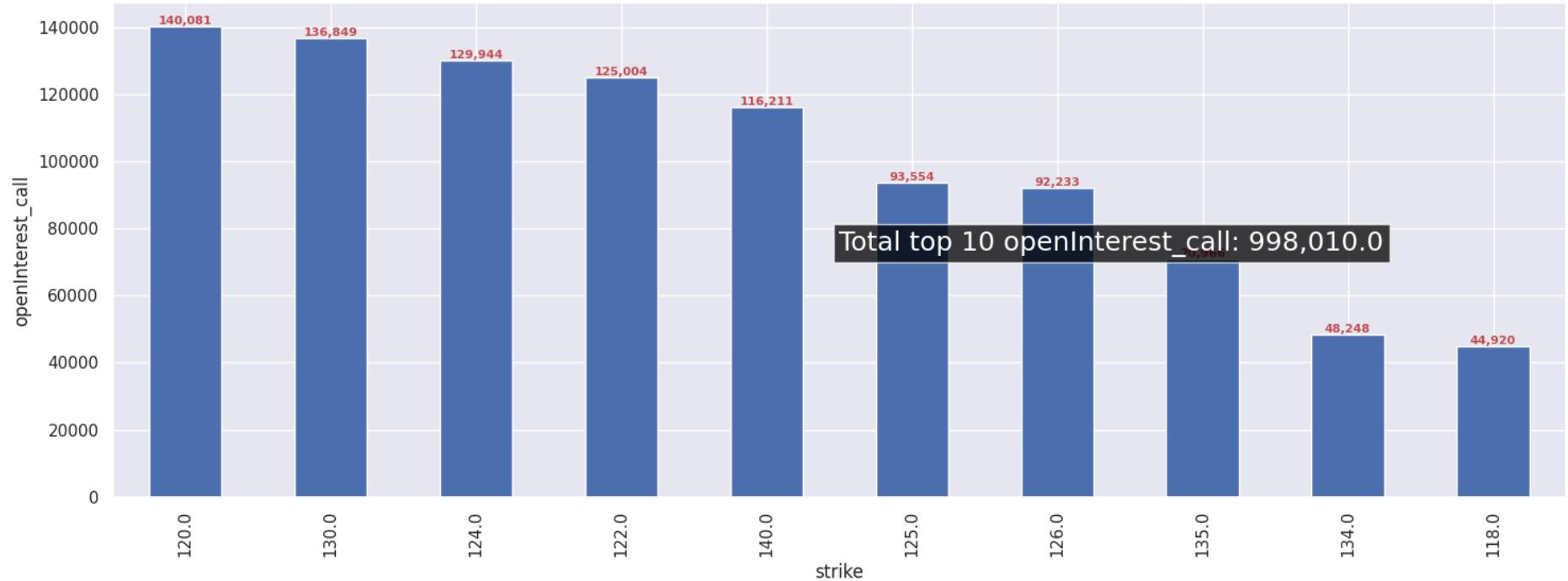
```
1 #for stock in stocks:atr_obj.get_attr_plot(stock)
2
3
4
5
6
7
```

i: NVDA
 Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21
 The last closing price of NVDA is: 121.67
 price_range: 102<=strike<=142
 total_val: 998010.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
120.0	NVDA250321C00120000	100970.0	140081.0	0.60	2025-03-14 15:59:54-04:00	NVDA250321P00120000	53477.0	158966	0.66
130.0	NVDA250321C00130000	74265.0	136849.0	0.57	2025-03-14 15:59:57-04:00	NVDA250321P00130000	4633.0	93488	0.58
124.0	NVDA250321C00124000	35380.0	129944.0	0.58	2025-03-14 15:59:59-04:00	NVDA250321P00124000	4796.0	102594	0.58
122.0	NVDA250321C00122000	83422.0	125004.0	0.59	2025-03-14 15:59:57-04:00	NVDA250321P00122000	20231.0	199060	0.66
140.0	NVDA250321C00140000	81728.0	116211.0	0.59	2025-03-14 15:59:24-04:00	NVDA250321P00140000	1436.0	30509	0.65
125.0	NVDA250321C00125000	92416.0	93554.0	0.58	2025-03-14 15:59:57-04:00	NVDA250321P00125000	14420.0	53042	0.58
126.0	NVDA250321C00126000	74239.0	92233.0	0.58	2025-03-14 15:59:57-04:00	NVDA250321P00126000	1724.0	15742	0.58
135.0	NVDA250321C00135000	42551.0	70966.0	0.58	2025-03-14 15:59:59-04:00	NVDA250321P00135000	720.0	27548	0.58
134.0	NVDA250321C00134000	16198.0	48248.0	0.57	2025-03-14 15:59:46-04:00	NVDA250321P00134000	131.0	13668	0.58
118.0	NVDA250321C00118000	35358.0	44920.0	0.60	2025-03-14 15:59:55-04:00	NVDA250321P00118000	30186.0	88980	0.61

TOP 10 OPENINTEREST_CALL for NVDA [LAST: 121.67] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21
 The last closing price of NVDA is: 121.67
 price_range: 102<=strike<=142
 total_val: 929904

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
122.0	NVDA250321C00122000	83422.0	125004.0	0.59	2025-03-14 15:59:57-04:00	NVDA250321P00122000	20231.0	199060	0.66
120.0	NVDA250321C00120000	100970.0	140081.0	0.60	2025-03-14 15:59:54-04:00	NVDA250321P00120000	53477.0	158966	0.66
124.0	NVDA250321C00124000	35380.0	129944.0	0.58	2025-03-14 15:59:59-04:00	NVDA250321P00124000	4796.0	102594	0.58
130.0	NVDA250321C00130000	74265.0	136849.0	0.57	2025-03-14 15:59:57-04:00	NVDA250321P00130000	4633.0	93488	0.58
118.0	NVDA250321C00118000	35358.0	44920.0	0.60	2025-03-14 15:59:55-04:00	NVDA250321P00118000	30186.0	88980	0.61

110.0	NVDA250321C00110000	11284.0	29681.0	0.59	2025-03-14 15:58:44-04:00	NVDA250321P00110000	47660.0	86821	0.66
105.0	NVDA250321C00105000	1180.0	18543.0	0.69	2025-03-14 15:59:21-04:00	NVDA250321P00105000	24458.0	67370	0.71
125.0	NVDA250321C00125000	92416.0	93554.0	0.58	2025-03-14 15:59:57-04:00	NVDA250321P00125000	14420.0	53042	0.55
115.0	NVDA250321C00115000	15374.0	37988.0	0.60	2025-03-14 15:59:55-04:00	NVDA250321P00115000	39958.0	49074	0.63
140.0	NVDA250321C00140000	81728.0	116211.0	0.59	2025-03-14 15:59:24-04:00	NVDA250321P00140000	1436.0	30509	0.65

TOP 10 OPENINTEREST_PUT for NVDA [LAST: 121.67] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21

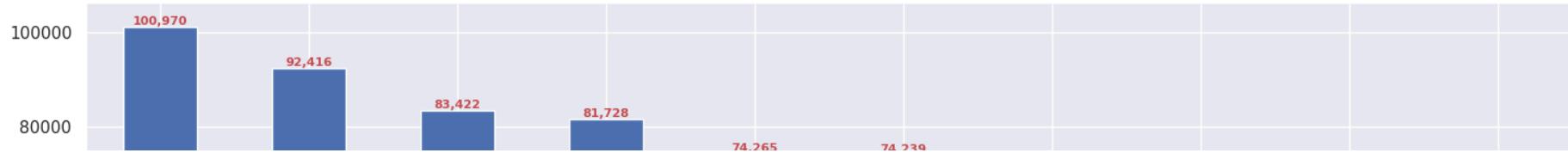
The last closing price of NVDA is: 121.67

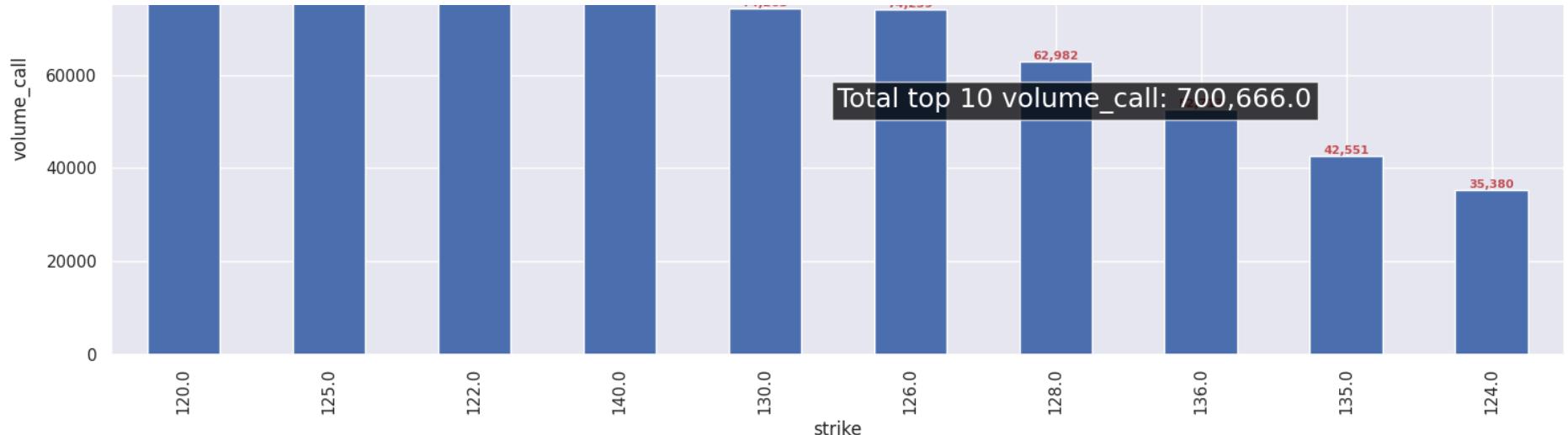
price_range: 102<=strike<=142

total_val: 700666.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
120.0	NVDA250321C00120000	100970.0	140081.0	0.60	2025-03-14 15:59:54-04:00	NVDA250321P00120000	53477.0	158966	0.66
125.0	NVDA250321C00125000	92416.0	93554.0	0.58	2025-03-14 15:59:57-04:00	NVDA250321P00125000	14420.0	53042	0.55
122.0	NVDA250321C00122000	83422.0	125004.0	0.59	2025-03-14 15:59:57-04:00	NVDA250321P00122000	20231.0	199060	0.66
140.0	NVDA250321C00140000	81728.0	116211.0	0.59	2025-03-14 15:59:24-04:00	NVDA250321P00140000	1436.0	30509	0.65
130.0	NVDA250321C00130000	74265.0	136849.0	0.57	2025-03-14 15:59:57-04:00	NVDA250321P00130000	4633.0	93488	0.55
126.0	NVDA250321C00126000	74239.0	92233.0	0.58	2025-03-14 15:59:57-04:00	NVDA250321P00126000	1724.0	15742	0.55
128.0	NVDA250321C00128000	62982.0	33414.0	0.57	2025-03-14 15:59:57-04:00	NVDA250321P00128000	1143.0	17325	0.54
136.0	NVDA250321C00136000	52713.0	11676.0	0.58	2025-03-14 15:59:17-04:00	NVDA250321P00136000	224.0	4355	0.55
135.0	NVDA250321C00135000	42551.0	70966.0	0.58	2025-03-14 15:59:59-04:00	NVDA250321P00135000	720.0	27548	0.55
124.0	NVDA250321C00124000	35380.0	129944.0	0.58	2025-03-14 15:59:59-04:00	NVDA250321P00124000	4796.0	102594	0.55

TOP 10 VOLUME_CALL for NVDA [LAST: 121.67] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

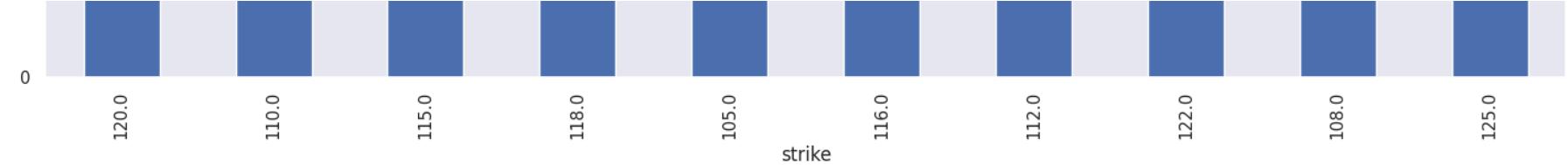
The last closing price of NVDA is: 121.67

price_range: 102<=strike<=142

total_val: 288430.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
120.0	NVDA250321C00120000	100970.0	140081.0	0.60	2025-03-14 15:59:54-04:00	NVDA250321P00120000	53477.0	158966	0.66
110.0	NVDA250321C00110000	11284.0	29681.0	0.59	2025-03-14 15:58:44-04:00	NVDA250321P00110000	47660.0	86821	0.66
115.0	NVDA250321C00115000	15374.0	37988.0	0.60	2025-03-14 15:59:55-04:00	NVDA250321P00115000	39958.0	49074	0.65
118.0	NVDA250321C00118000	35358.0	44920.0	0.60	2025-03-14 15:59:55-04:00	NVDA250321P00118000	30186.0	88980	0.61
105.0	NVDA250321C00105000	1180.0	18543.0	0.69	2025-03-14 15:59:21-04:00	NVDA250321P00105000	24458.0	67370	0.71
116.0	NVDA250321C00116000	10854.0	16684.0	0.61	2025-03-14 15:59:53-04:00	NVDA250321P00116000	21059.0	29084	0.62
112.0	NVDA250321C00112000	3625.0	11764.0	0.64	2025-03-14 15:59:50-04:00	NVDA250321P00112000	20711.0	22146	0.65
122.0	NVDA250321C00122000	83422.0	125004.0	0.59	2025-03-14 15:59:57-04:00	NVDA250321P00122000	20231.0	199060	0.66
108.0	NVDA250321C00108000	2212.0	10779.0	0.67	2025-03-14 15:58:47-04:00	NVDA250321P00108000	16270.0	25433	0.68
125.0	NVDA250321C00125000	92416.0	93554.0	0.58	2025-03-14 15:59:57-04:00	NVDA250321P00125000	14420.0	53042	0.55





i: TSLA

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

The last closing price of TSLA is: 249.98

price_range: 230<=strike<=270

total_val: 81296

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
260.0	TSLA250321C00260000	36171	13335	0.71	2025-03-14 15:59:59-04:00	TSLA250321P00260000	5991.0	5876	0.65
255.0	TSLA250321C00255000	18862	13095	0.71	2025-03-14 15:59:59-04:00	TSLA250321P00255000	4003.0	2538	0.76
250.0	TSLA250321C00250000	47017	11761	0.72	2025-03-14 15:59:59-04:00	TSLA250321P00250000	30201.0	14506	0.71
252.5	TSLA250321C00252500	9178	9964	0.71	2025-03-14 15:59:54-04:00	TSLA250321P00252500	5641.0	1923	0.76
270.0	TSLA250321C00270000	19880	7531	0.70	2025-03-14 15:59:56-04:00	TSLA250321P00270000	1276.0	6492	0.76
240.0	TSLA250321C00240000	11389	7095	0.74	2025-03-14 15:59:52-04:00	TSLA250321P00240000	32855.0	7589	0.75
265.0	TSLA250321C00265000	9449	5864	0.70	2025-03-14 15:59:53-04:00	TSLA250321P00265000	1328.0	3785	0.65
245.0	TSLA250321C00245000	19574	4923	0.73	2025-03-14 15:59:47-04:00	TSLA250321P00245000	36406.0	5740	0.71
230.0	TSLA250321C00230000	1965	4145	0.76	2025-03-14 15:59:50-04:00	TSLA250321P00230000	22221.0	11042	0.76
267.5	TSLA250321C00267500	3651	3583	0.71	2025-03-14 15:59:58-04:00	TSLA250321P00267500	388.0	1247	0.65

TOP 10 OPENINTEREST_CALL for TSLA [LAST: 249.98] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

The last closing price of TSLA is: 249.98

price_range: 230<=strike<=270

Printed on: 2025-03-14 15:59:59-0400

total_val: 66768

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
250.0	TSLA250321C00250000	47017	11761	0.72	2025-03-14 15:59:59-04:00	TSLA250321P00250000	30201.0	14506	0.71
230.0	TSLA250321C00230000	1965	4145	0.76	2025-03-14 15:59:50-04:00	TSLA250321P00230000	22221.0	11042	0.76
240.0	TSLA250321C00240000	11389	7095	0.74	2025-03-14 15:59:52-04:00	TSLA250321P00240000	32855.0	7589	0.75
235.0	TSLA250321C00235000	3246	3014	0.75	2025-03-14 15:59:51-04:00	TSLA250321P00235000	14689.0	6611	0.74
270.0	TSLA250321C00270000	19880	7531	0.70	2025-03-14 15:59:56-04:00	TSLA250321P00270000	1276.0	6492	0.76
260.0	TSLA250321C00260000	36171	13335	0.71	2025-03-14 15:59:59-04:00	TSLA250321P00260000	5991.0	5876	0.65
245.0	TSLA250321C00245000	19574	4923	0.73	2025-03-14 15:59:47-04:00	TSLA250321P00245000	36406.0	5740	0.71
265.0	TSLA250321C00265000	9449	5864	0.70	2025-03-14 15:59:53-04:00	TSLA250321P00265000	1328.0	3785	0.65
232.5	TSLA250321C00232500	827	1436	0.76	2025-03-14 15:59:42-04:00	TSLA250321P00232500	4082.0	2589	0.75
255.0	TSLA250321C00255000	18862	13095	0.71	2025-03-14 15:59:59-04:00	TSLA250321P00255000	4003.0	2538	0.76

TOP 10 OPENINTEREST_PUT for TSLA [LAST: 249.98] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

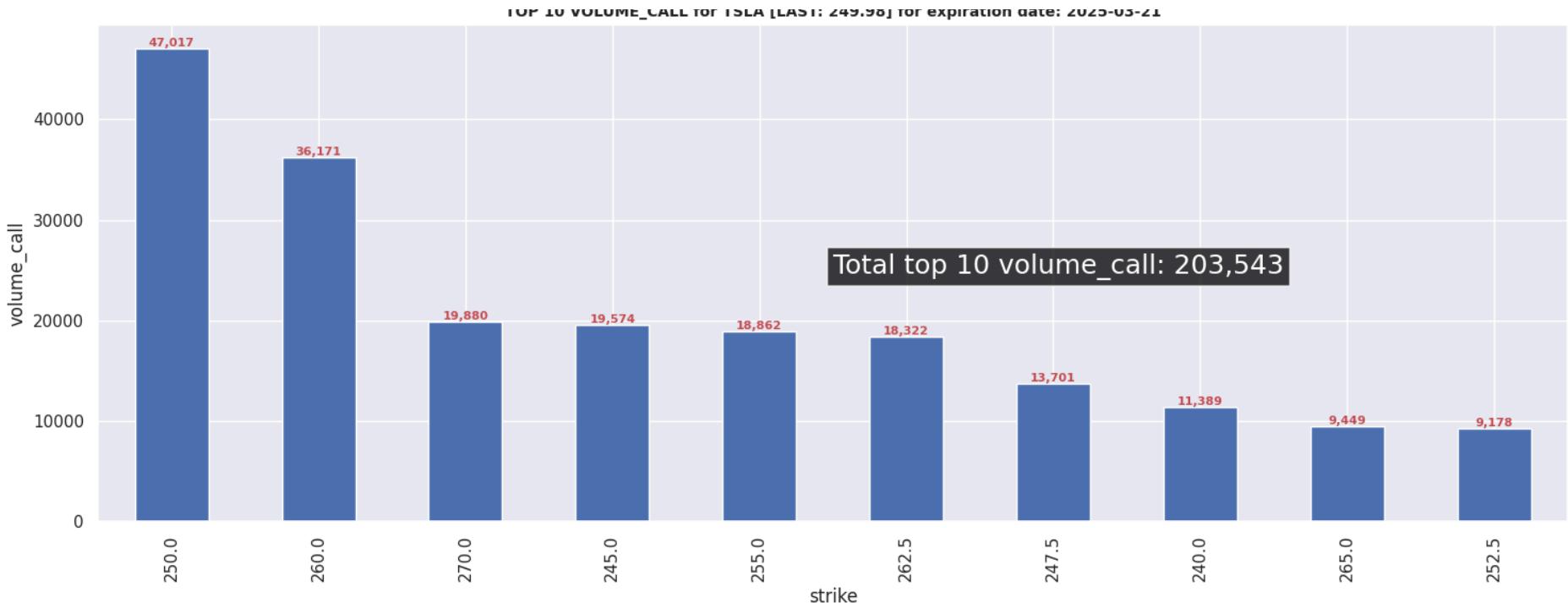
Applied expiration date: 2025-03-21

The last closing price of TSLA is: 249.98

price_range: 230<=strike<=270

total_val: 203543

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
250.0	TSLA250321C00250000	47017	11761	0.72	2025-03-14 15:59:59-04:00	TSLA250321P00250000	30201.0	14506	0.71
260.0	TSLA250321C00260000	36171	13335	0.71	2025-03-14 15:59:59-04:00	TSLA250321P00260000	5991.0	5876	0.65
270.0	TSLA250321C00270000	19880	7531	0.70	2025-03-14 15:59:56-04:00	TSLA250321P00270000	1276.0	6492	0.76
245.0	TSLA250321C00245000	19574	4923	0.73	2025-03-14 15:59:47-04:00	TSLA250321P00245000	36406.0	5740	0.71
255.0	TSLA250321C00255000	18862	13095	0.71	2025-03-14 15:59:59-04:00	TSLA250321P00255000	4003.0	2538	0.76
262.5	TSLA250321C00262500	18322	2071	0.71	2025-03-14 15:59:56-04:00	TSLA250321P00262500	793.0	789	0.65
247.5	TSLA250321C00247500	13701	1887	0.72	2025-03-14 15:59:57-04:00	TSLA250321P00247500	21843.0	1968	0.71
240.0	TSLA250321C00240000	11389	7095	0.74	2025-03-14 15:59:52-04:00	TSLA250321P00240000	32855.0	7589	0.75
265.0	TSLA250321C00265000	9449	5864	0.70	2025-03-14 15:59:53-04:00	TSLA250321P00265000	1328.0	3785	0.65
252.5	TSLA250321C00252500	9178	9964	0.71	2025-03-14 15:59:54-04:00	TSLA250321P00252500	5641.0	1923	0.76



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

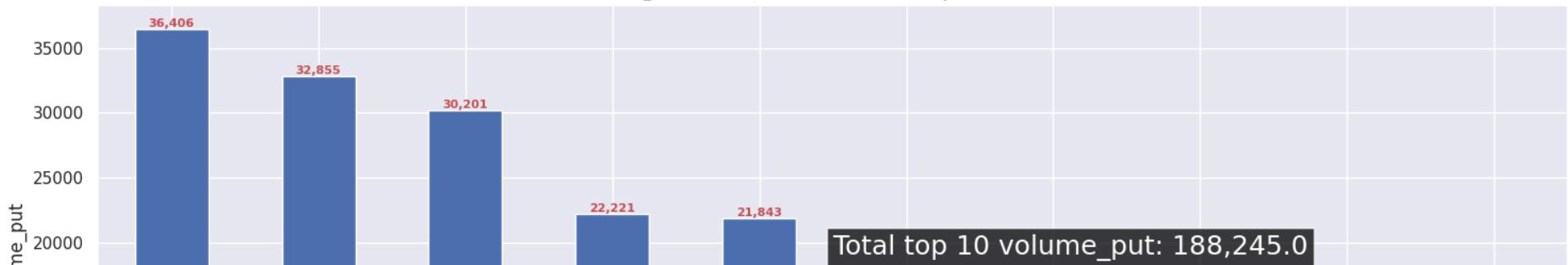
The last closing price of TSLA is: 249.98

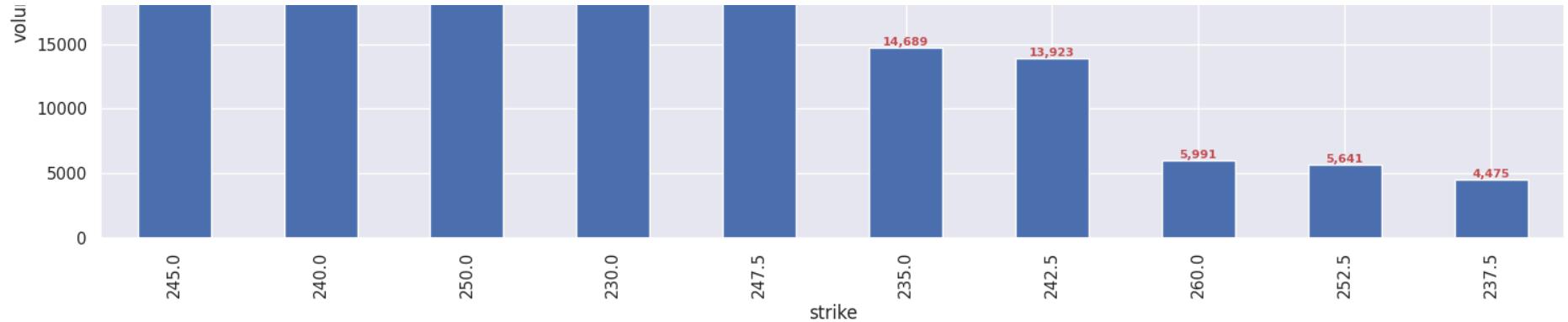
price_range: 230<=strike<=270

total_val: 188245.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
245.0	TSLA250321C00245000	19574	4923	0.73	2025-03-14 15:59:47-04:00	TSLA250321P00245000	36406.0	5740	0.71
240.0	TSLA250321C00240000	11389	7095	0.74	2025-03-14 15:59:52-04:00	TSLA250321P00240000	32855.0	7589	0.72
250.0	TSLA250321C00250000	47017	11761	0.72	2025-03-14 15:59:59-04:00	TSLA250321P00250000	30201.0	14506	0.71
230.0	TSLA250321C00230000	1965	4145	0.76	2025-03-14 15:59:59-04:00	TSLA250321P00230000	22221.0	11842	0.76
247.5	TSLA250321C00247500	13701	1887	0.72	2025-03-14 15:59:57-04:00	TSLA250321P00247500	21843.0	1968	0.71
235.0	TSLA250321C00235000	3246	3014	0.75	2025-03-14 15:59:51-04:00	TSLA250321P00235000	14689.0	6611	0.74
242.5	TSLA250321C00242500	6441	2230	0.73	2025-03-14 15:59:58-04:00	TSLA250321P00242500	13923.0	1086	0.72
260.0	TSLA250321C00260000	36171	13335	0.71	2025-03-14 15:59:59-04:00	TSLA250321P00260000	5991.0	5876	0.65
252.5	TSLA250321C00252500	9178	9964	0.71	2025-03-14 15:59:54-04:00	TSLA250321P00252500	5641.0	1923	0.76
237.5	TSLA250321C00237500	2104	1979	0.74	2025-03-14 15:58:58-04:00	TSLA250321P00237500	4475.0	2236	0.72

TOP 10 VOLUME_PUT for TSLA [LAST: 249.98] for expiration date: 2025-03-21





i: MSFT

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

The last closing price of MSFT is: 388.56

price_range: 369<=strike<=409

total_val: 36046

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
400.0	MSFT250321C00400000	11137	11505	0.24	2025-03-14 15:59:49-04:00	MSFT250321P00400000	1049.0	9342	0.27
395.0	MSFT250321C00395000	6064	4416	0.25	2025-03-14 15:59:39-04:00	MSFT250321P00395000	784.0	3722	0.25
405.0	MSFT250321C00405000	5533	4186	0.23	2025-03-14 15:59:45-04:00	MSFT250321P00405000	400.0	3428	0.26
390.0	MSFT250321C00390000	7245	3626	0.26	2025-03-14 15:59:59-04:00	MSFT250321P00390000	1345.0	8170	0.25
380.0	MSFT250321C00380000	1675	3461	0.29	2025-03-14 15:55:45-04:00	MSFT250321P00380000	3585.0	9689	0.27
385.0	MSFT250321C00385000	4771	3016	0.27	2025-03-14 15:59:42-04:00	MSFT250321P00385000	1958.0	5243	0.26
402.5	MSFT250321C00402500	3285	2040	0.23	2025-03-14 15:59:59-04:00	MSFT250321P00402500	12.0	609	0.25
407.5	MSFT250321C00407500	940	1668	0.23	2025-03-14 15:56:39-04:00	MSFT250321P00407500	50.0	296	0.31
397.5	MSFT250321C00397500	5042	1552	0.24	2025-03-14 15:57:50-04:00	MSFT250321P00397500	103.0	802	0.25
370.0	MSFT250321C00370000	145	576	0.38	2025-03-14 15:48:53-04:00	MSFT250321P00370000	3611.0	6956	0.36

TOP 10 OPENINTEREST_CALL for MSFT [LAST: 388.56] for expiration date: 2025-03-21



400.
395.
405.
390.
380.
385.
402.
407.
397.
370.

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21
The last closing price of MSFT is: 388.56
price_range: 369<=strike<=409
total_val: 53234

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
380.0	MSFT250321C00380000	1675	3461	0.29	2025-03-14 15:55:45-04:00	MSFT250321P00380000	3585.0	9689	0.27
400.0	MSFT250321C00400000	11137	11505	0.24	2025-03-14 15:59:49-04:00	MSFT250321P00400000	1049.0	9342	0.27
390.0	MSFT250321C00390000	7245	3626	0.26	2025-03-14 15:59:59-04:00	MSFT250321P00390000	1345.0	8170	0.25
370.0	MSFT250321C00370000	145	576	0.38	2025-03-14 15:48:53-04:00	MSFT250321P00370000	3611.0	6956	0.36
375.0	MSFT250321C00375000	384	567	0.31	2025-03-14 15:59:25-04:00	MSFT250321P00375000	2350.0	5273	0.28
385.0	MSFT250321C00385000	4771	3016	0.27	2025-03-14 15:59:42-04:00	MSFT250321P00385000	1958.0	5243	0.26
395.0	MSFT250321C00395000	6064	4416	0.25	2025-03-14 15:59:39-04:00	MSFT250321P00395000	784.0	3722	0.25
405.0	MSFT250321C00405000	5533	4186	0.23	2025-03-14 15:59:45-04:00	MSFT250321P00405000	400.0	3428	0.26
397.5	MSFT250321C00397500	5042	1552	0.24	2025-03-14 15:57:50-04:00	MSFT250321P00397500	103.0	802	0.25
402.5	MSFT250321C00402500	3285	2040	0.23	2025-03-14 15:59:59-04:00	MSFT250321P00402500	12.0	609	0.25

TOP 10 OPENINTEREST_PUT for MSFT [LAST: 388.56] for expiration date: 2025-03-21



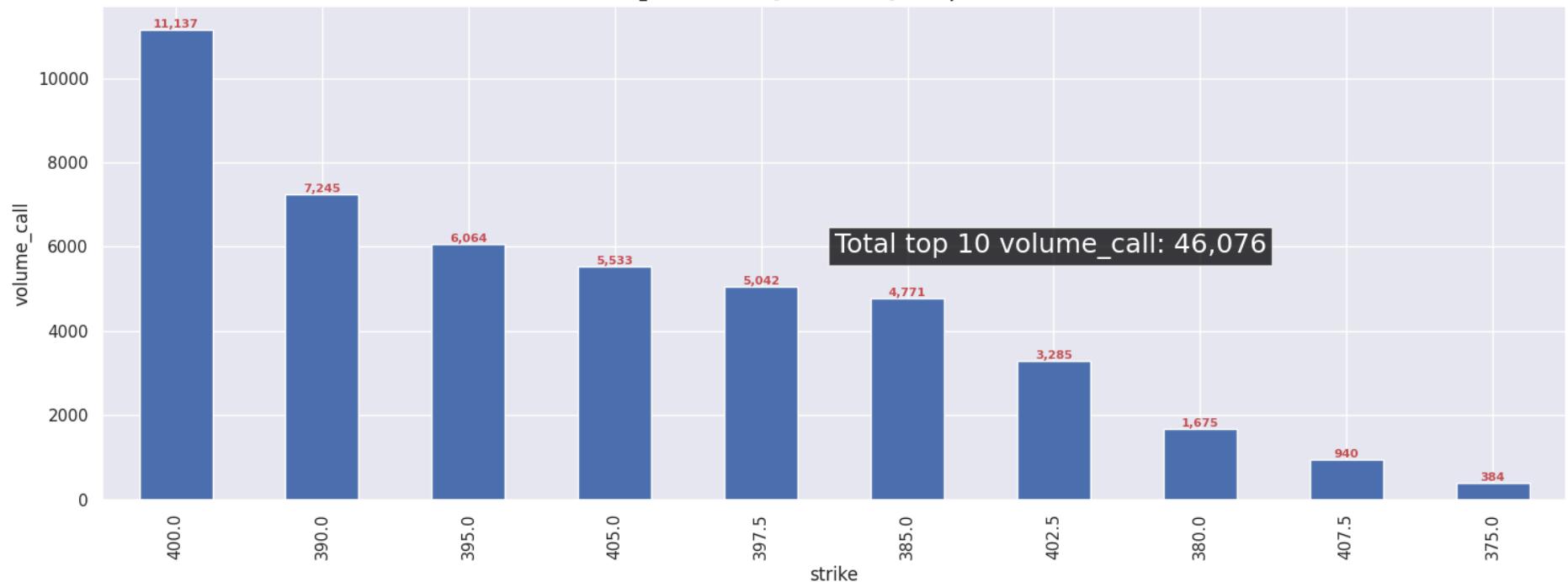
Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21
The last closing price of MSFT is: 388.56
price_range: 369<=strike<=409
total_val: 46076

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
400.0	MSFT250321C00400000	11137	11505	0.24	2025-03-14 15:59:49-04:00	MSFT250321P00400000	1049.0	9342	0.27
390.0	MSFT250321C00390000	7245	3626	0.26	2025-03-14 15:59:59-04:00	MSFT250321P00390000	1345.0	8170	0.25

	MSFT250321C00405000	5533	4186	0.23	2025-03-14 15:59:45-04:00	MSFT250321P00405000	400.0	3428	0.26
397.5	MSFT250321C00397500	5042	1552	0.24	2025-03-14 15:57:50-04:00	MSFT250321P00397500	103.0	802	0.25
385.0	MSFT250321C00385000	4771	3016	0.27	2025-03-14 15:59:42-04:00	MSFT250321P00385000	1958.0	5243	0.26
402.5	MSFT250321C00402500	3285	2040	0.23	2025-03-14 15:59:59-04:00	MSFT250321P00402500	12.0	609	0.25
380.0	MSFT250321C00380000	1675	3461	0.29	2025-03-14 15:55:45-04:00	MSFT250321P00380000	3585.0	9689	0.27
407.5	MSFT250321C00407500	940	1668	0.23	2025-03-14 15:56:39-04:00	MSFT250321P00407500	50.0	296	0.31
375.0	MSFT250321C00375000	384	567	0.31	2025-03-14 15:59:25-04:00	MSFT250321P00375000	2350.0	5273	0.25

TOP 10 VOLUME_CALL for MSFT [LAST: 388.56] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

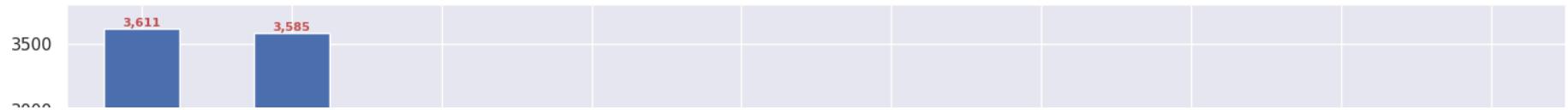
The last closing price of MSFT is: 388.56

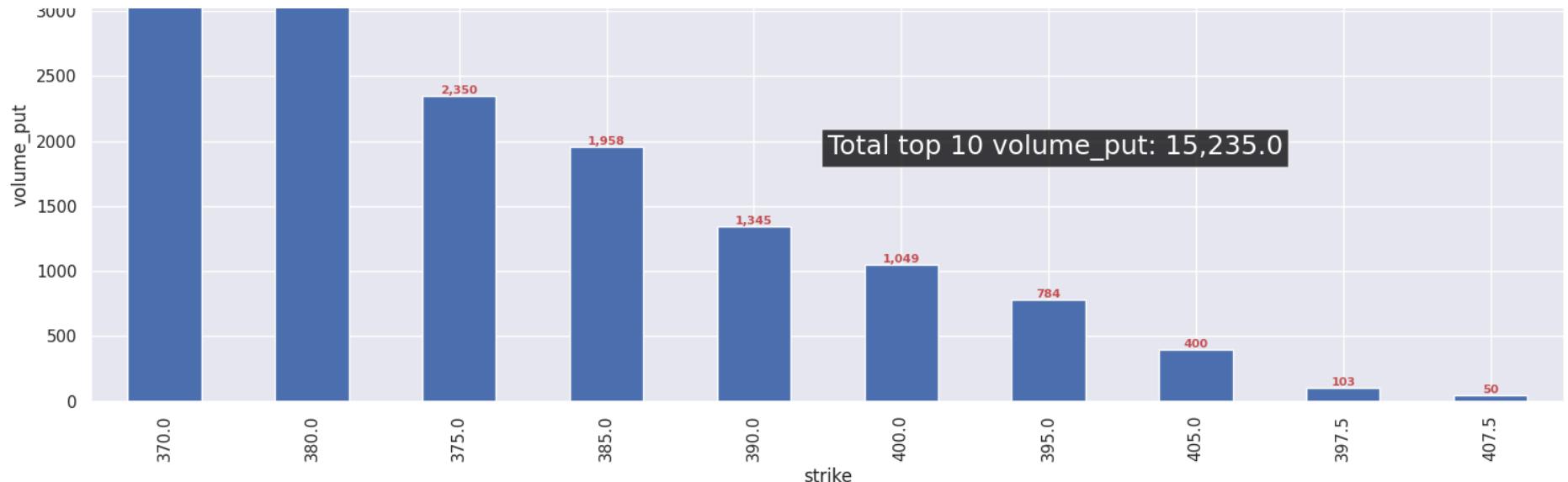
price_range: 369<=strike<=409

total_val: 15235.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
370.0	MSFT250321C00370000	145	576	0.38	2025-03-14 15:48:53-04:00	MSFT250321P00370000	3611.0	6956	0.36
380.0	MSFT250321C00380000	1675	3461	0.29	2025-03-14 15:55:45-04:00	MSFT250321P00380000	3585.0	9689	0.27
375.0	MSFT250321C00375000	384	567	0.31	2025-03-14 15:59:25-04:00	MSFT250321P00375000	2350.0	5273	0.28
385.0	MSFT250321C00385000	4771	3016	0.27	2025-03-14 15:59:42-04:00	MSFT250321P00385000	1958.0	5243	0.26
390.0	MSFT250321C00390000	7245	3626	0.26	2025-03-14 15:59:59-04:00	MSFT250321P00390000	1345.0	8170	0.25
400.0	MSFT250321C00400000	11137	11505	0.24	2025-03-14 15:59:49-04:00	MSFT250321P00400000	1049.0	9342	0.27
395.0	MSFT250321C00395000	6064	4416	0.25	2025-03-14 15:59:39-04:00	MSFT250321P00395000	784.0	3722	0.25
405.0	MSFT250321C00405000	5533	4186	0.23	2025-03-14 15:59:45-04:00	MSFT250321P00405000	400.0	3428	0.26
397.5	MSFT250321C00397500	5042	1552	0.24	2025-03-14 15:57:50-04:00	MSFT250321P00397500	103.0	802	0.25
407.5	MSFT250321C00407500	940	1668	0.23	2025-03-14 15:56:39-04:00	MSFT250321P00407500	50.0	296	0.31

TOP 10 VOLUME_PUT for MSFT [LAST: 388.56] for expiration date: 2025-03-21





i: META

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

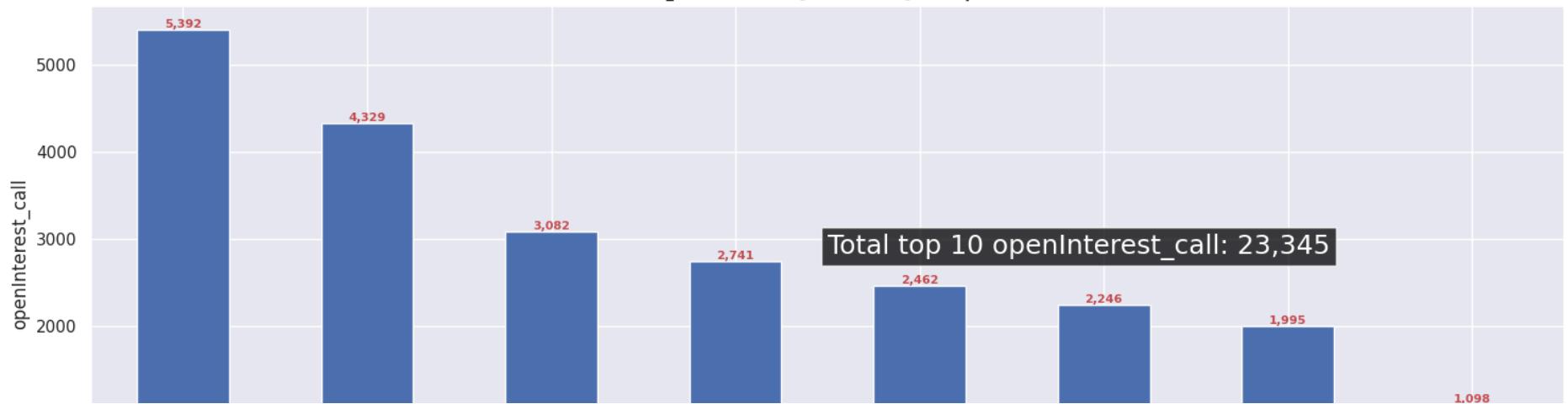
The last closing price of META is: 607.6

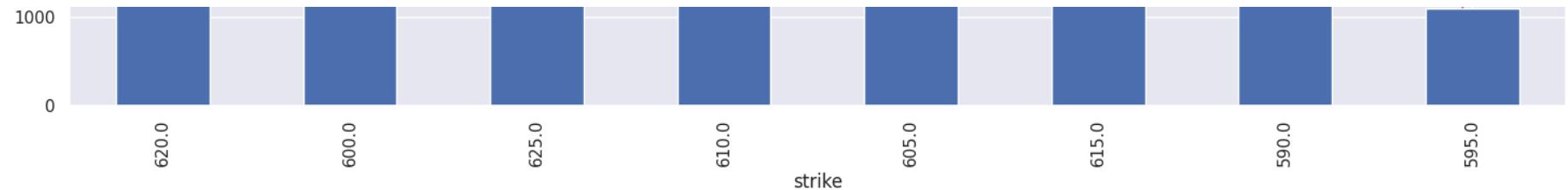
price_range: 588<=strike<=628

total_val: 23345

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
620.0	META250321C00620000	6351.0	5392	0.37	2025-03-14 15:59:58-04:00	META250321P00620000	1468.0	4772	0.36
600.0	META250321C00600000	5558.0	4329	0.40	2025-03-14 15:59:42-04:00	META250321P00600000	5514.0	4590	0.35
625.0	META250321C00625000	2752.0	3082	0.36	2025-03-14 15:59:55-04:00	META250321P00625000	376.0	2172	0.36
610.0	META250321C00610000	4584.0	2741	0.38	2025-03-14 15:59:40-04:00	META250321P00610000	1105.0	4864	0.37
605.0	META250321C00605000	4066.0	2462	0.39	2025-03-14 15:59:13-04:00	META250321P00605000	4899.0	2184	0.36
615.0	META250321C00615000	2463.0	2246	0.38	2025-03-14 15:59:24-04:00	META250321P00615000	338.0	1966	0.37
590.0	META250321C00590000	1904.0	1995	0.43	2025-03-14 15:59:20-04:00	META250321P00590000	5619.0	3052	0.41
595.0	META250321C00595000	1049.0	1098	0.41	2025-03-14 15:59:40-04:00	META250321P00595000	2208.0	1884	0.46

TOP 10 OPENINTEREST_CALL for META [LAST: 607.6] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

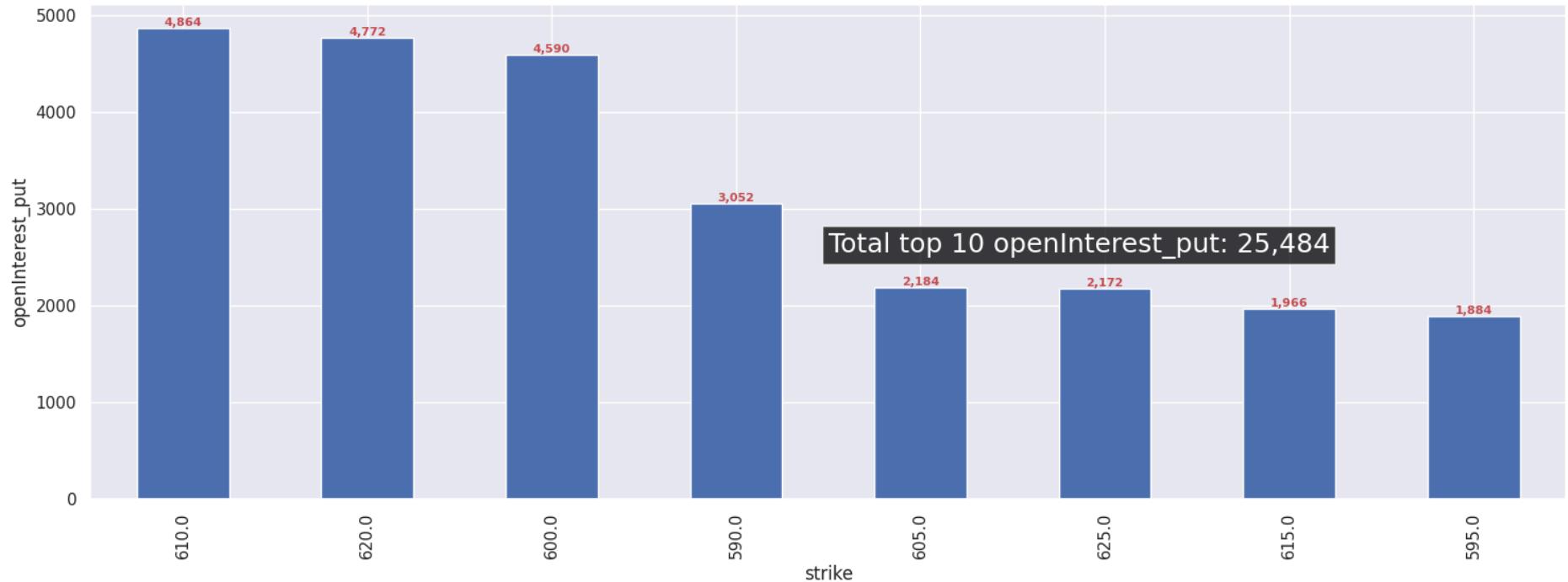
The last closing price of META is: 607.6

price_range: 588<=strike<=628

total_val: 25484

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
610.0	META250321C00610000	4584.0	2741	0.38	2025-03-14 15:59:40-04:00	META250321P00610000	1105.0	4864	0.37
620.0	META250321C00620000	6351.0	5392	0.37	2025-03-14 15:59:58-04:00	META250321P00620000	1468.0	4772	0.36
600.0	META250321C00600000	5558.0	4329	0.40	2025-03-14 15:59:42-04:00	META250321P00600000	5514.0	4590	0.35
590.0	META250321C00590000	1984.0	1995	0.43	2025-03-14 15:59:20-04:00	META250321P00590000	5619.0	3052	0.41
605.0	META250321C00605000	4066.0	2462	0.39	2025-03-14 15:59:13-04:00	META250321P00605000	4899.0	2184	0.38
625.0	META250321C00625000	2752.0	3082	0.36	2025-03-14 15:59:55-04:00	META250321P00625000	376.0	2172	0.36
615.0	META250321C00615000	2463.0	2246	0.38	2025-03-14 15:59:24-04:00	META250321P00615000	338.0	1966	0.37
595.0	META250321C00595000	1049.0	1098	0.41	2025-03-14 15:59:40-04:00	META250321P00595000	2208.0	1884	0.46

TOP 10 OPENINTEREST_PUT for META [LAST: 607.6] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

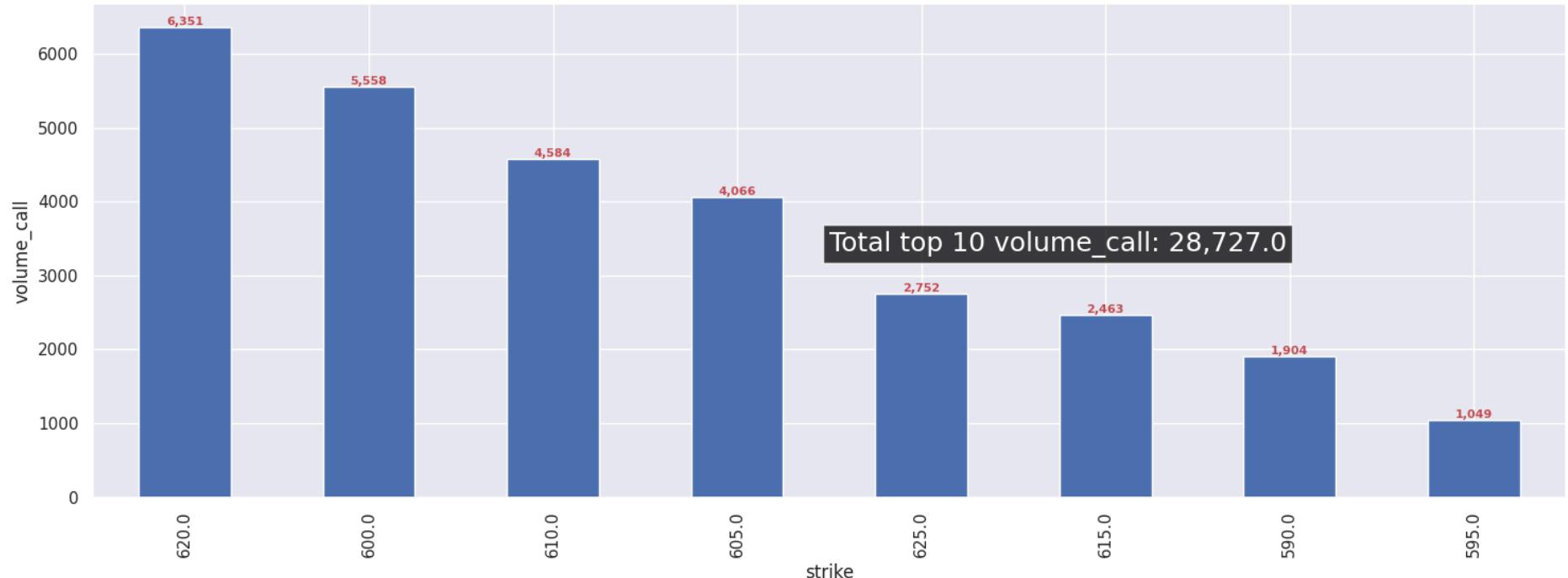
The last closing price of META is: 607.6

price_range: 588<=strike<=628

total_val: 28727.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
620.0	META250321C00620000	6351.0	5392	0.37	2025-03-14 15:59:58-04:00	META250321P00620000	1468.0	4772	0.36
600.0	META250321C00600000	5558.0	4329	0.40	2025-03-14 15:59:42-04:00	META250321P00600000	5514.0	4590	0.35
610.0	META250321C00610000	4584.0	2741	0.38	2025-03-14 15:59:40-04:00	META250321P00610000	1105.0	4864	0.37
605.0	META250321C00605000	4066.0	2462	0.39	2025-03-14 15:59:13-04:00	META250321P00605000	4899.0	2184	0.36
625.0	META250321C00625000	2752.0	3082	0.36	2025-03-14 15:59:55-04:00	META250321P00625000	376.0	2172	0.36
615.0	META250321C00615000	2463.0	2246	0.38	2025-03-14 15:59:24-04:00	META250321P00615000	338.0	1966	0.37
590.0	META250321C00590000	1904.0	1995	0.43	2025-03-14 15:59:20-04:00	META250321P00590000	5619.0	3052	0.41
595.0	META250321C00595000	1049.0	1098	0.41	2025-03-14 15:59:40-04:00	META250321P00595000	2208.0	1884	0.46

TOP 10 VOLUME_CALL for META [LAST: 607.6] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19'),

Applied expiration date: 2025-03-21

The last closing price of META is: 607.6

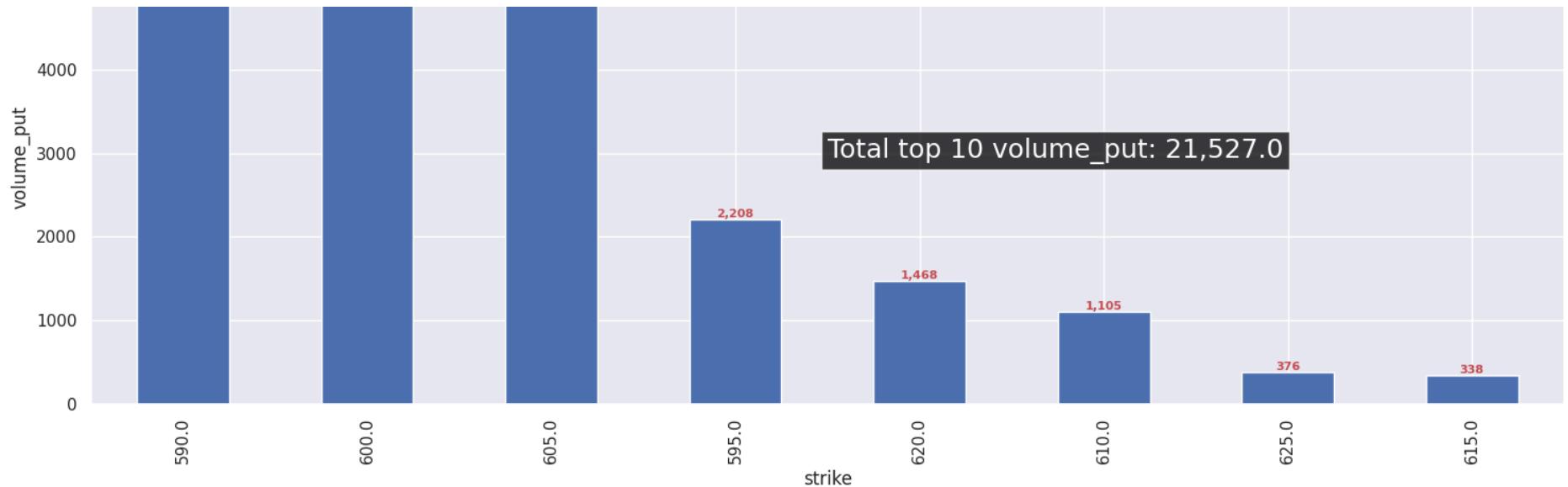
price_range: 588<=strike<=628

total_val: 21527.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
590.0	META250321C00590000	1904.0	1995	0.43	2025-03-14 15:59:20-04:00	META250321P00590000	5619.0	3052	0.41
600.0	META250321C00600000	5558.0	4329	0.40	2025-03-14 15:59:42-04:00	META250321P00600000	5514.0	4590	0.35
605.0	META250321C00605000	4066.0	2462	0.39	2025-03-14 15:59:13-04:00	META250321P00605000	4899.0	2184	0.36
595.0	META250321C00595000	1049.0	1098	0.41	2025-03-14 15:59:40-04:00	META250321P00595000	2208.0	1884	0.46
620.0	META250321C00620000	6351.0	5392	0.37	2025-03-14 15:59:58-04:00	META250321P00620000	1468.0	4772	0.36
610.0	META250321C00610000	4584.0	2741	0.38	2025-03-14 15:59:40-04:00	META250321P00610000	1105.0	4864	0.37
625.0	META250321C00625000	2752.0	3082	0.36	2025-03-14 15:59:55-04:00	META250321P00625000	376.0	2172	0.36
615.0	META250321C00615000	2463.0	2246	0.38	2025-03-14 15:59:24-04:00	META250321P00615000	338.0	1966	0.37

TOP 10 VOLUME_PUT for META [LAST: 607.6] for expiration date: 2025-03-21





i: AAPL

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

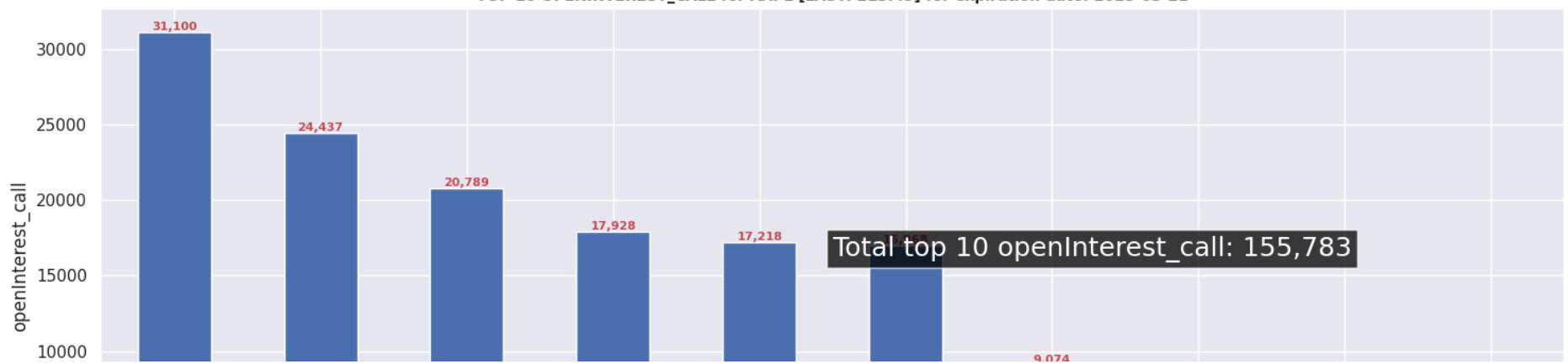
The last closing price of AAPL is: 213.49

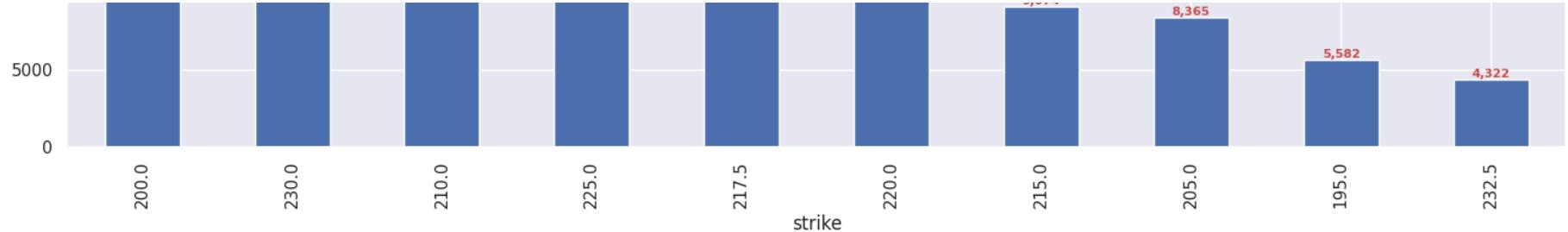
price_range: 193<=strike<=233

total_val: 155783

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
200.0	AAPL250321C00200000	957.0	31100	0.41	2025-03-14 15:58:48-04:00	AAPL250321P00200000	22105.0	43668	0.35
230.0	AAPL250321C00230000	12614.0	24437	0.32	2025-03-14 15:59:35-04:00	AAPL250321P00230000	1143.0	18816	0.38
210.0	AAPL250321C00210000	9655.0	20789	0.34	2025-03-14 15:59:46-04:00	AAPL250321P00210000	29632.0	33389	0.34
225.0	AAPL250321C00225000	16224.0	17928	0.30	2025-03-14 15:59:50-04:00	AAPL250321P00225000	583.0	20239	0.35
217.5	AAPL250321C00217500	32330.0	17218	0.31	2025-03-14 15:59:54-04:00	AAPL250321P00217500	5107.0	3155	0.32
220.0	AAPL250321C00220000	32064.0	16968	0.30	2025-03-14 15:59:58-04:00	AAPL250321P00220000	4651.0	29004	0.31
215.0	AAPL250321C00215000	29199.0	9074	0.32	2025-03-14 15:59:59-04:00	AAPL250321P00215000	8244.0	13353	0.32
205.0	AAPL250321C00205000	1820.0	8365	0.37	2025-03-14 15:58:56-04:00	AAPL250321P00205000	22163.0	16775	0.36
195.0	AAPL250321C00195000	160.0	5582	0.50	2025-03-14 15:57:47-04:00	AAPL250321P00195000	3764.0	10369	0.43
232.5	AAPL250321C00232500	2101.0	4322	0.33	2025-03-14 15:59:18-04:00	AAPL250321P00232500	70.0	2824	0.42

TOP 10 OPENINTEREST_CALL for AAPL [LAST: 213.49] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21

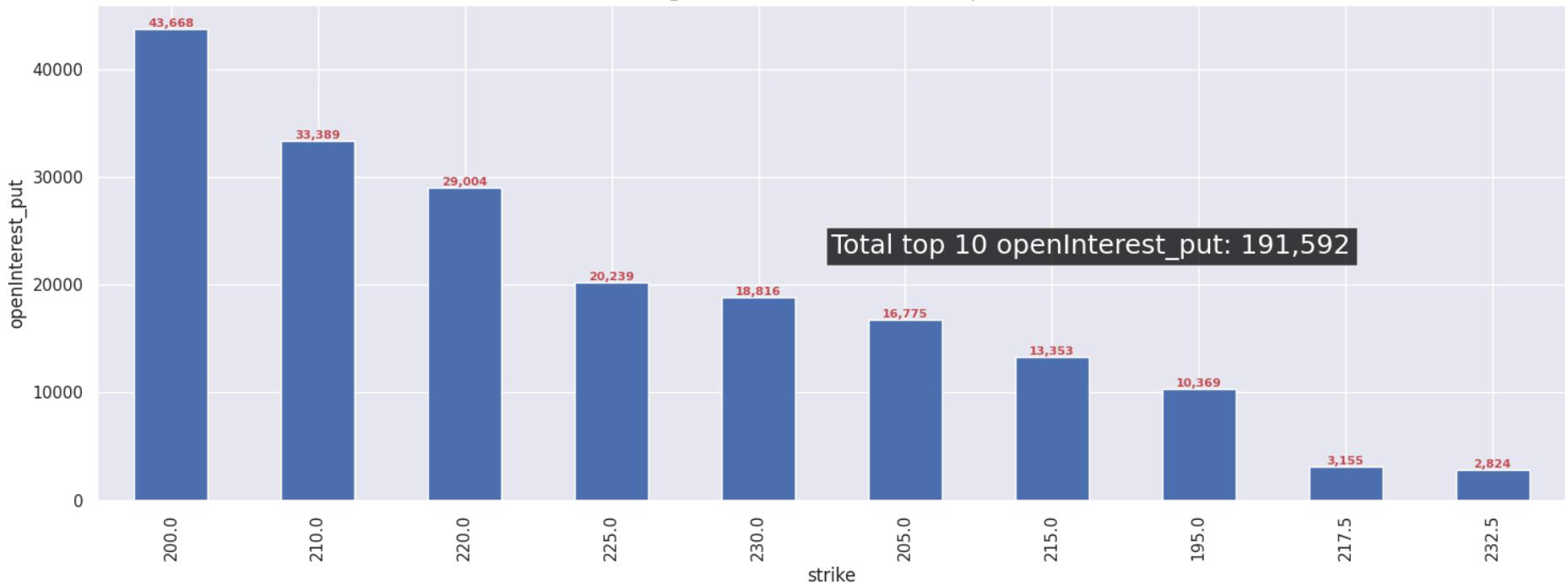
The last closing price of AAPL is: 213.49

price_range: 193<=strike<=233

total_val: 191592

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
200.0	AAPL250321C00200000	957.0	31100	0.41	2025-03-14 15:58:48-04:00	AAPL250321P00200000	22105.0	43668	0.35
210.0	AAPL250321C00210000	9655.0	20789	0.34	2025-03-14 15:59:46-04:00	AAPL250321P00210000	29632.0	33389	0.34
220.0	AAPL250321C00220000	32064.0	16968	0.30	2025-03-14 15:59:58-04:00	AAPL250321P00220000	4651.0	29004	0.31
225.0	AAPL250321C00225000	16224.0	17928	0.30	2025-03-14 15:59:50-04:00	AAPL250321P00225000	583.0	20239	0.35
230.0	AAPL250321C00230000	12614.0	24437	0.32	2025-03-14 15:59:35-04:00	AAPL250321P00230000	1143.0	18816	0.38
205.0	AAPL250321C00205000	1820.0	8365	0.37	2025-03-14 15:58:56-04:00	AAPL250321P00205000	22163.0	16775	0.36
215.0	AAPL250321C00215000	29199.0	9074	0.32	2025-03-14 15:59:59-04:00	AAPL250321P00215000	8244.0	13353	0.32
195.0	AAPL250321C00195000	160.0	5582	0.50	2025-03-14 15:57:47-04:00	AAPL250321P00195000	3764.0	10369	0.43
217.5	AAPL250321C00217500	32330.0	17218	0.31	2025-03-14 15:59:54-04:00	AAPL250321P00217500	5107.0	3155	0.32
232.5	AAPL250321C00232500	2101.0	4322	0.33	2025-03-14 15:59:18-04:00	AAPL250321P00232500	70.0	2824	0.42

TOP 10 OPENINTEREST_PUT for AAPL [LAST: 213.49] for expiration date: 2025-03-21

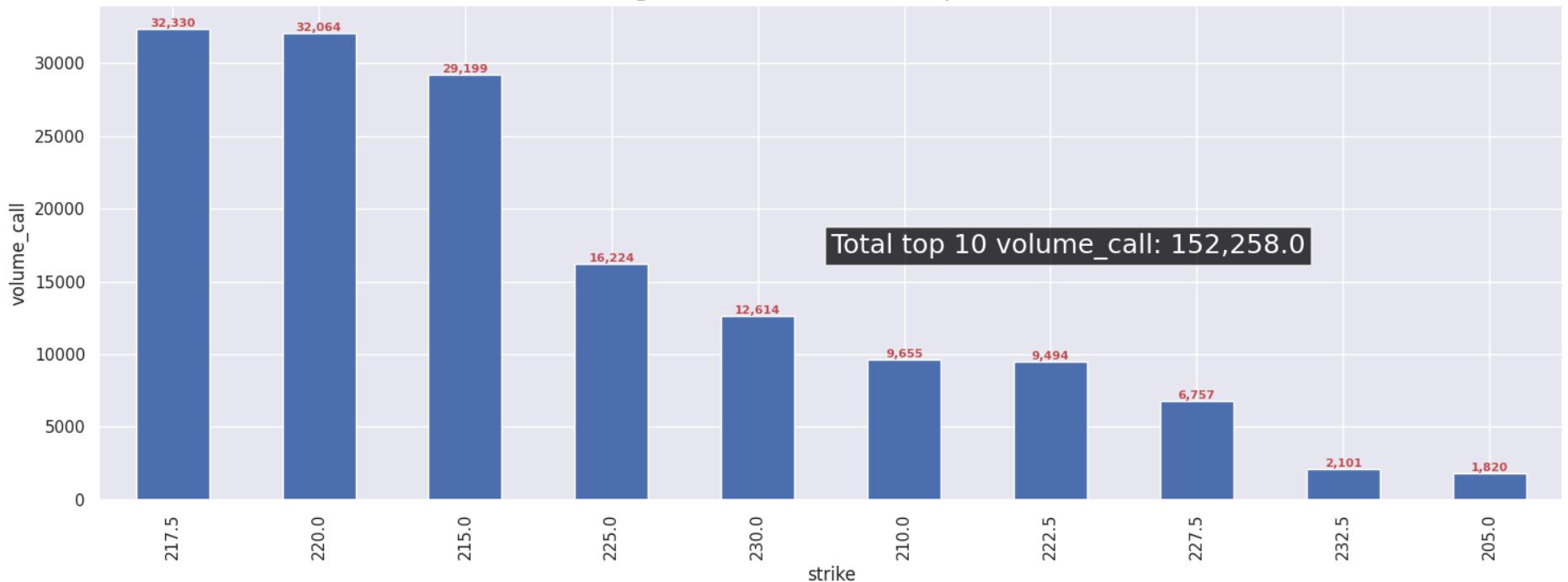


Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21
 The last closing price of AAPL is: 213.49
 price_range: 193<=strike<=233
 total_val: 152258.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
217.5	AAPL250321C00217500	32330.0	17218	0.31	2025-03-14 15:59:54-04:00	AAPL250321P00217500	5107.0	3155	0.32
220.0	AAPL250321C00220000	32064.0	16968	0.30	2025-03-14 15:59:58-04:00	AAPL250321P00220000	4651.0	29004	0.31
215.0	AAPL250321C00215000	29199.0	9074	0.32	2025-03-14 15:59:59-04:00	AAPL250321P00215000	8244.0	13353	0.32
225.0	AAPL250321C00225000	16224.0	17928	0.30	2025-03-14 15:59:50-04:00	AAPL250321P00225000	583.0	20239	0.33
230.0	AAPL250321C00230000	12614.0	24437	0.32	2025-03-14 15:59:35-04:00	AAPL250321P00230000	1143.0	18816	0.38
210.0	AAPL250321C00210000	9655.0	20789	0.34	2025-03-14 15:59:46-04:00	AAPL250321P00210000	29632.0	33389	0.34
222.5	AAPL250321C00222500	9494.0	3753	0.30	2025-03-14 15:59:58-04:00	AAPL250321P00222500	740.0	1729	0.32
227.5	AAPL250321C00227500	6757.0	3611	0.31	2025-03-14 15:59:47-04:00	AAPL250321P00227500	160.0	1511	0.35
232.5	AAPL250321C00232500	2101.0	4322	0.33	2025-03-14 15:59:18-04:00	AAPL250321P00232500	70.0	2824	0.42
205.0	AAPL250321C00205000	1820.0	8365	0.37	2025-03-14 15:58:56-04:00	AAPL250321P00205000	22163.0	16775	0.36

TOP 10 VOLUME_CALL for AAPL [LAST: 213.49] for expiration date: 2025-03-21



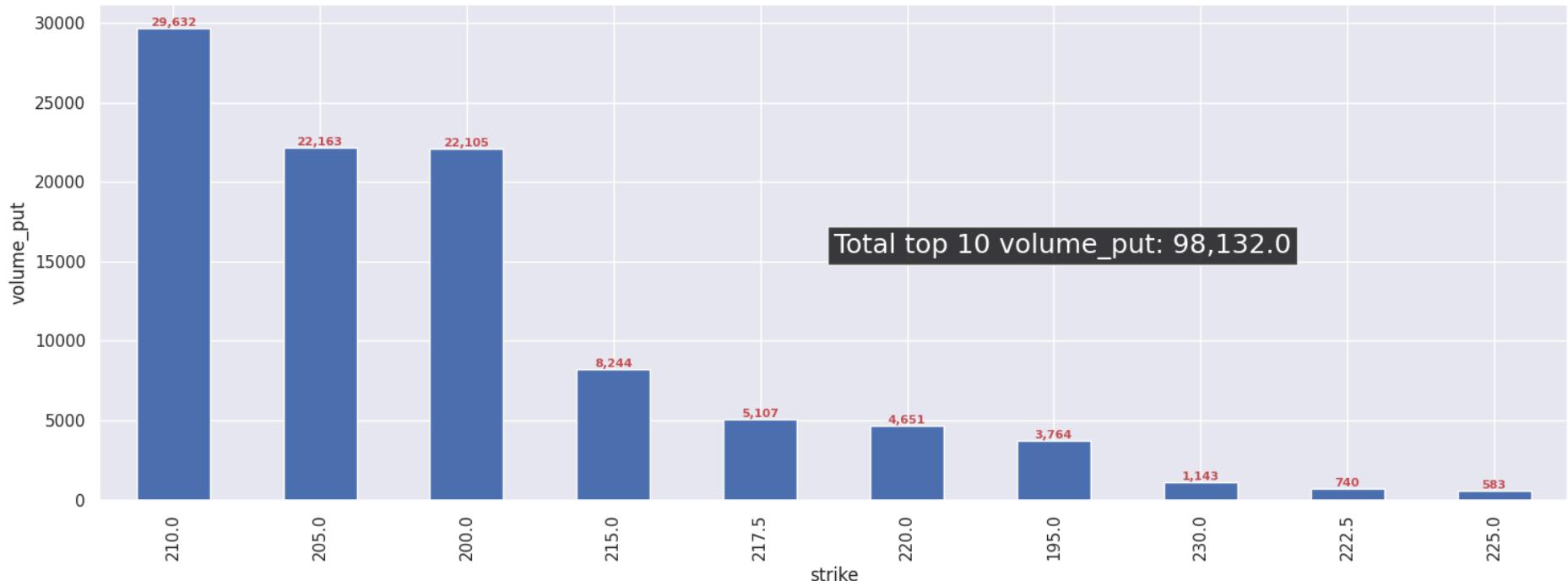
Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21
 The last closing price of AAPL is: 213.49
 price_range: 193<=strike<=233
 total_val: 98132.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
210.0	AAPL250321C00210000	9655.0	20789	0.34	2025-03-14 15:59:46-04:00	AAPL250321P00210000	29632.0	33389	0.34
205.0	AAPL250321C00205000	1820.0	8365	0.37	2025-03-14 15:58:56-04:00	AAPL250321P00205000	22163.0	16775	0.36
200.0	AAPL250321C00200000	957.0	31100	0.41	2025-03-14 15:58:48-04:00	AAPL250321P00200000	22105.0	43668	0.35
215.0	AAPL250321C00215000	29199.0	9074	0.32	2025-03-14 15:59:59-04:00	AAPL250321P00215000	8244.0	13353	0.32
217.5	AAPL250321C00217500	32330.0	17218	0.31	2025-03-14 15:59:54-04:00	AAPL250321P00217500	5107.0	3155	0.32
220.0	AAPL250321C00220000	32064.0	16968	0.30	2025-03-14 15:59:58-04:00	AAPL250321P00220000	4651.0	29004	0.31
195.0	AAPL250321C00195000	160.0	5582	0.50	2025-03-14 15:57:47-04:00	AAPL250321P00195000	3764.0	10369	0.43
230.0	AAPL250321C00230000	12614.0	24437	0.32	2025-03-14 15:59:35-04:00	AAPL250321P00230000	1143.0	18816	0.38

222.5	AAPL250321C00222500	9494.0	3753	0.30	2025-03-14 15:59:58-04:00	AAPL250321P00222500	740.0	1729	0.34
225.0	AAPL250321C00225000	16224.0	17928	0.30	2025-03-14 15:59:50-04:00	AAPL250321P00225000	583.0	20239	0.34

TOP 10 VOLUME_PUT for AAPL [LAST: 213.49] for expiration date: 2025-03-21



i: GOOGL

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21

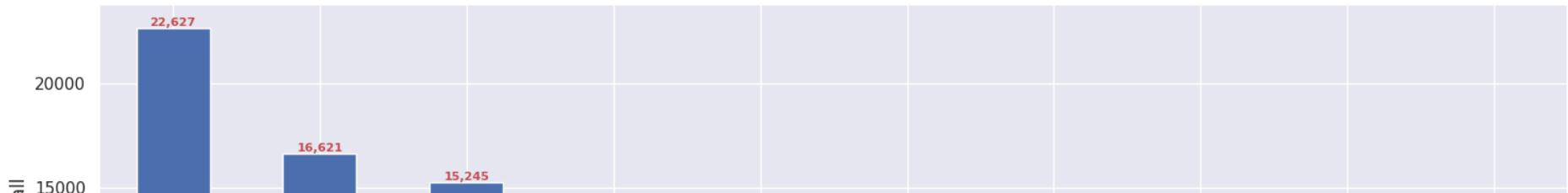
The last closing price of GOOGL is: 165.49

price_range: 145<=strike<=185

total_val: 99923

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
175.0	GOOGL250321C00175000	7192	22627	0.31	2025-03-14 15:59:51-04:00	GOOGL250321P00175000	722.0	16751	0
185.0	GOOGL250321C00185000	1002	16621	0.40	2025-03-14 15:59:01-04:00	GOOGL250321P00185000	1689.0	2344	0
180.0	GOOGL250321C00180000	6197	15245	0.34	2025-03-14 15:59:20-04:00	GOOGL250321P00180000	596.0	28743	0
170.0	GOOGL250321C00170000	11823	12890	0.31	2025-03-14 15:59:51-04:00	GOOGL250321P00170000	3812.0	21272	0
177.5	GOOGL250321C00177500	4667	9467	0.32	2025-03-14 15:58:59-04:00	GOOGL250321P00177500	101.0	968	0
167.5	GOOGL250321C00167500	12489	6434	0.31	2025-03-14 15:59:50-04:00	GOOGL250321P00167500	1630.0	3278	0
165.0	GOOGL250321C00165000	10021	5482	0.33	2025-03-14 15:58:58-04:00	GOOGL250321P00165000	4007.0	13309	0
182.5	GOOGL250321C00182500	454	3987	0.37	2025-03-14 15:58:59-04:00	GOOGL250321P00182500	2.0	21	0
155.0	GOOGL250321C00155000	158	3657	0.44	2025-03-14 14:05:06-04:00	GOOGL250321P00155000	2676.0	9352	0
150.0	GOOGL250321C00150000	152	3513	0.55	2025-03-14 15:35:35-04:00	GOOGL250321P00150000	1428.0	19749	0

TOP 10 OPENINTEREST_CALL for GOOGL [LAST: 165.49] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21

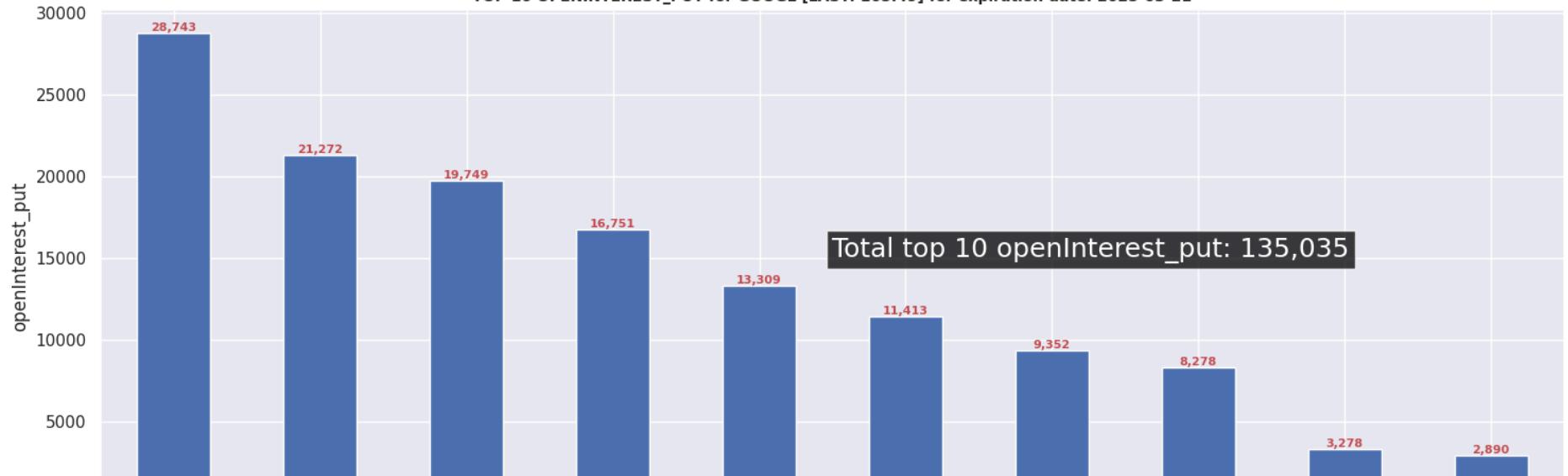
The last closing price of GOOGL is: 165.49

price_range: 145<=strike<=185

total_val: 135035

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_f
180.0	GOOGL250321C00180000	6197	15245	0.34	2025-03-14 15:59:20-04:00	GOOGL250321P00180000	596.0	28743	0
170.0	GOOGL250321C00170000	11823	12890	0.31	2025-03-14 15:59:51-04:00	GOOGL250321P00170000	3812.0	21272	0
150.0	GOOGL250321C00150000	152	3513	0.55	2025-03-14 15:35:35-04:00	GOOGL250321P00150000	1428.0	19749	0
175.0	GOOGL250321C00175000	7192	22627	0.31	2025-03-14 15:59:51-04:00	GOOGL250321P00175000	722.0	16751	0
165.0	GOOGL250321C00165000	10021	5482	0.33	2025-03-14 15:58:58-04:00	GOOGL250321P00165000	4007.0	13309	0
160.0	GOOGL250321C00160000	1150	3084	0.37	2025-03-14 15:54:40-04:00	GOOGL250321P00160000	6605.0	11413	0
155.0	GOOGL250321C00155000	158	3657	0.44	2025-03-14 14:05:06-04:00	GOOGL250321P00155000	2676.0	9352	0
145.0	GOOGL250321C00145000	7	1821	0.56	2025-03-14 12:47:29-04:00	GOOGL250321P00145000	257.0	8278	0
167.5	GOOGL250321C00167500	12489	6434	0.31	2025-03-14 15:59:50-04:00	GOOGL250321P00167500	1630.0	3278	0
162.5	GOOGL250321C00162500	1266	935	0.35	2025-03-14 15:57:27-04:00	GOOGL250321P00162500	7108.0	2890	0

TOP 10 OPENINTEREST_PUT for GOOGL [LAST: 165.49] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

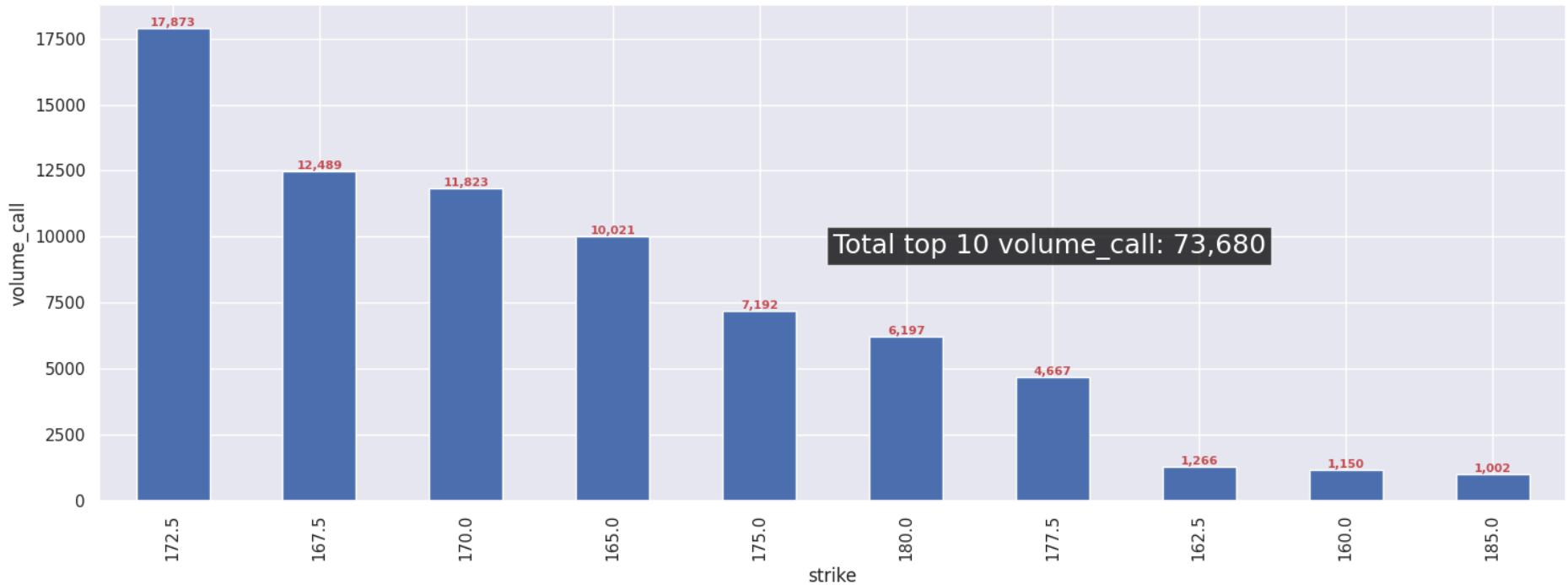
The last closing price of GOOGL is: 165.49

price_range: 145<=strike<=185

total_val: 73680

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_r
172.5	GOOGL250321C00172500	17873	2663	0.30	2025-03-14 15:59:24-04:00	GOOGL250321P00172500	151.0	1976	0
167.5	GOOGL250321C00167500	12489	6434	0.31	2025-03-14 15:59:50-04:00	GOOGL250321P00167500	1630.0	3278	0
170.0	GOOGL250321C00170000	11823	12890	0.31	2025-03-14 15:59:51-04:00	GOOGL250321P00170000	3812.0	21272	0
165.0	GOOGL250321C00165000	10021	5482	0.33	2025-03-14 15:58:58-04:00	GOOGL250321P00165000	4007.0	13309	0
175.0	GOOGL250321C00175000	7192	22627	0.31	2025-03-14 15:59:51-04:00	GOOGL250321P00175000	722.0	16751	0
180.0	GOOGL250321C00180000	6197	15245	0.34	2025-03-14 15:59:20-04:00	GOOGL250321P00180000	596.0	28743	0
177.5	GOOGL250321C00177500	4667	9467	0.32	2025-03-14 15:58:59-04:00	GOOGL250321P00177500	101.0	968	0
162.5	GOOGL250321C00162500	1266	935	0.35	2025-03-14 15:57:27-04:00	GOOGL250321P00162500	7108.0	2890	0
160.0	GOOGL250321C00160000	1150	3084	0.37	2025-03-14 15:54:40-04:00	GOOGL250321P00160000	6605.0	11413	0
185.0	GOOGL250321C00185000	1002	16621	0.40	2025-03-14 15:59:01-04:00	GOOGL250321P00185000	1689.0	2344	0

TOP 10 VOLUME_CALL for GOOGL [LAST: 165.49] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

The last closing price of GOOGL is: 165.49

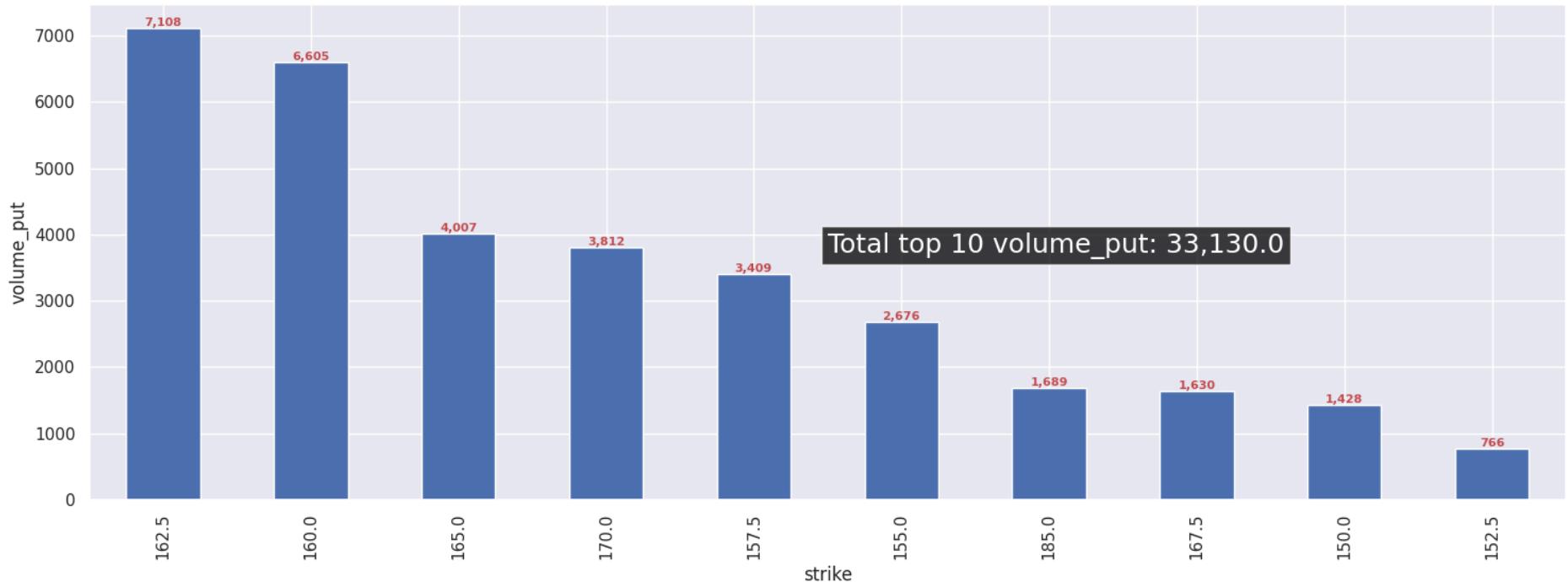
price_range: 145<=strike<=185

total_val: 33130.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_r
172.5	GOOGL250321C00172500	17873	2663	0.30	2025-03-14 15:59:24-04:00	GOOGL250321P00172500	151.0	1976	0

162.5	GOOGL250321C00162500	1266	935	0.35	2025-03-14 15:57:27-04:00	GOOGL250321P00162500	7108.0	2890	0
160.0	GOOGL250321C00160000	1150	3084	0.37	2025-03-14 15:54:40-04:00	GOOGL250321P00160000	6605.0	11413	0
165.0	GOOGL250321C00165000	10021	5482	0.33	2025-03-14 15:58:58-04:00	GOOGL250321P00165000	4007.0	13309	0
170.0	GOOGL250321C00170000	11823	12890	0.31	2025-03-14 15:59:51-04:00	GOOGL250321P00170000	3812.0	21272	0
157.5	GOOGL250321C00157500	100	176	0.40	2025-03-14 15:22:22-04:00	GOOGL250321P00157500	3409.0	1695	0
155.0	GOOGL250321C00155000	158	3657	0.44	2025-03-14 14:05:06-04:00	GOOGL250321P00155000	2676.0	9352	0
185.0	GOOGL250321C00185000	1002	16621	0.40	2025-03-14 15:59:01-04:00	GOOGL250321P00185000	1689.0	2344	0
167.5	GOOGL250321C00167500	12489	6434	0.31	2025-03-14 15:59:50-04:00	GOOGL250321P00167500	1630.0	3278	0
150.0	GOOGL250321C00150000	152	3513	0.55	2025-03-14 15:35:35-04:00	GOOGL250321P00150000	1428.0	19749	0
152.5	GOOGL250321C00152500	9	39	0.61	2025-03-14 10:39:20-04:00	GOOGL250321P00152500	766.0	1617	0

TOP 10 VOLUME_PUT for GOOGL [LAST: 165.49] for expiration date: 2025-03-21



i: AMZN

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19'),

Applied expiration date: 2025-03-21

The last closing price of AMZN is: 197.95

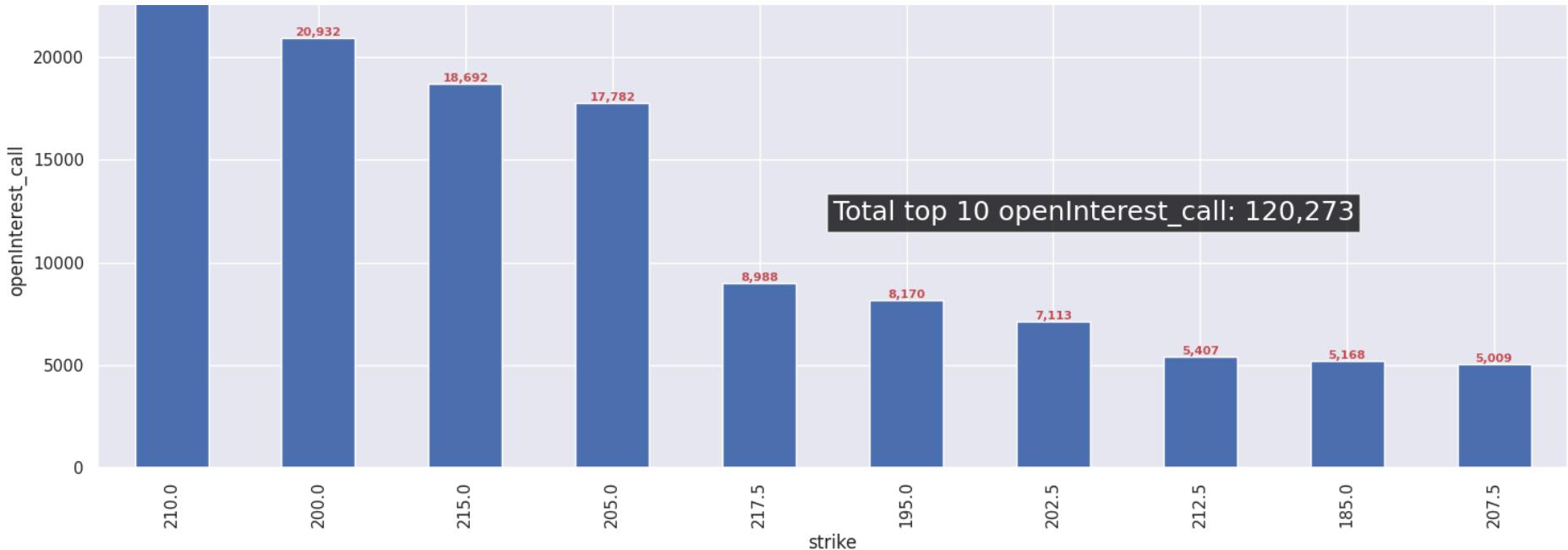
price_range: 178<=strike<=218

total_val: 120273

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
210.0	AMZN250321C00210000	21959	23012	0.33	2025-03-14 15:59:52-04:00	AMZN250321P00210000	1072.0	12959	0.3%
200.0	AMZN250321C00200000	15911	20932	0.34	2025-03-14 15:59:55-04:00	AMZN250321P00200000	4195.0	14523	0.3%
215.0	AMZN250321C00215000	4626	18692	0.34	2025-03-14 15:59:44-04:00	AMZN250321P00215000	1251.0	12283	0.3%
205.0	AMZN250321C00205000	15752	17782	0.33	2025-03-14 15:59:44-04:00	AMZN250321P00205000	1138.0	13724	0.31
217.5	AMZN250321C00217500	5075	8988	0.36	2025-03-14 15:59:46-04:00	AMZN250321P00217500	86.0	886	0.3%
195.0	AMZN250321C00195000	5342	8170	0.37	2025-03-14 15:58:29-04:00	AMZN250321P00195000	8679.0	10263	0.3%
202.5	AMZN250321C00202500	16641	7113	0.33	2025-03-14 15:59:49-04:00	AMZN250321P00202500	779.0	2581	0.3%
212.5	AMZN250321C00212500	11946	5407	0.33	2025-03-14 15:59:16-04:00	AMZN250321P00212500	123.0	3205	0.3%
185.0	AMZN250321C00185000	2142	5168	0.47	2025-03-14 15:58:49-04:00	AMZN250321P00185000	3384.0	12694	0.4%
207.5	AMZN250321C00207500	7175	5009	0.32	2025-03-14 15:59:56-04:00	AMZN250321P00207500	173.0	3407	0.3%

TOP 10 OPENINTEREST_CALL for AMZN [LAST: 197.95] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19'),

Applied expiration date: 2025-03-21

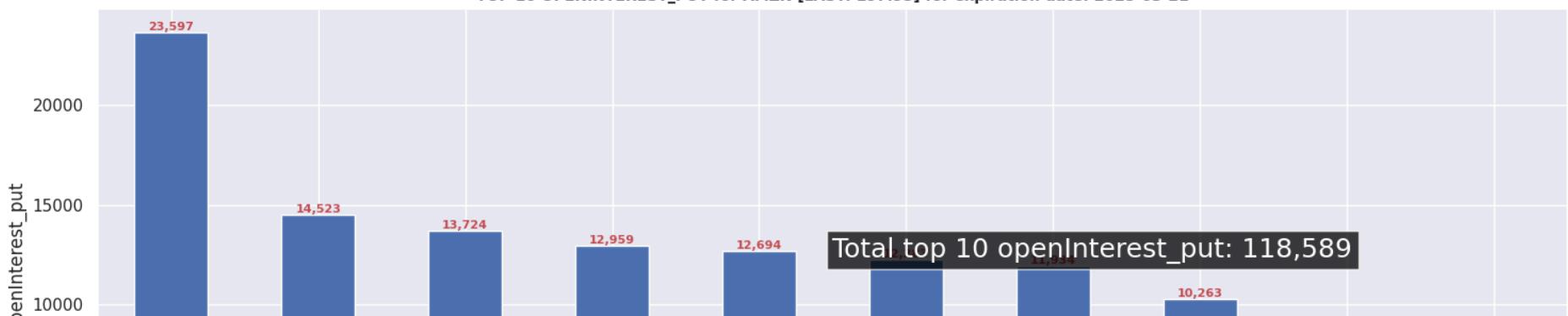
The last closing price of AMZN is: 197.95

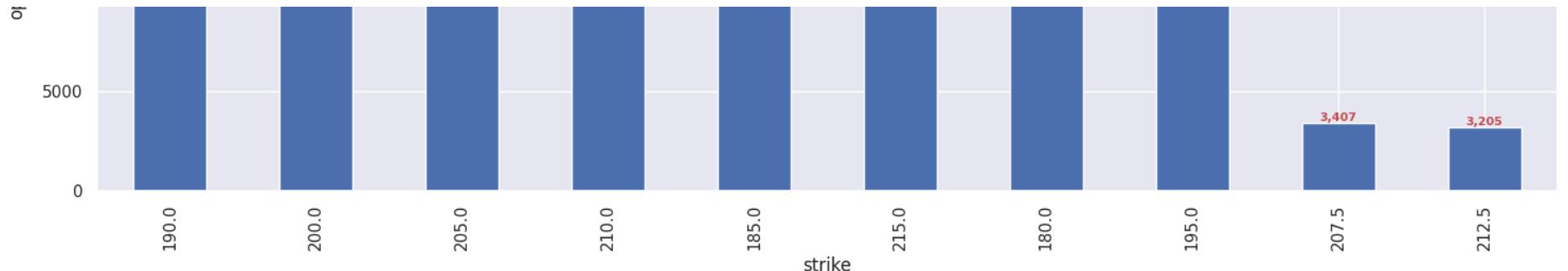
price_range: 178<=strike<=218

total_val: 118589

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
190.0	AMZN250321C00190000	2830	4557	0.41	2025-03-14 15:59:06-04:00	AMZN250321P00190000	10359.0	23597	0.37
200.0	AMZN250321C00200000	15911	20932	0.34	2025-03-14 15:59:55-04:00	AMZN250321P00200000	4195.0	14523	0.33
205.0	AMZN250321C00205000	15752	17782	0.33	2025-03-14 15:59:44-04:00	AMZN250321P00205000	1138.0	13724	0.31
210.0	AMZN250321C00210000	21959	23012	0.33	2025-03-14 15:59:52-04:00	AMZN250321P00210000	1072.0	12959	0.32
185.0	AMZN250321C00185000	2142	5168	0.47	2025-03-14 15:58:49-04:00	AMZN250321P00185000	3384.0	12694	0.46
215.0	AMZN250321C00215000	4626	18692	0.34	2025-03-14 15:59:44-04:00	AMZN250321P00215000	1251.0	12283	0.36
180.0	AMZN250321C00180000	1015	3777	0.53	2025-03-14 15:47:12-04:00	AMZN250321P00180000	2857.0	11934	0.44
195.0	AMZN250321C00195000	5342	8170	0.37	2025-03-14 15:58:29-04:00	AMZN250321P00195000	8679.0	10263	0.35
207.5	AMZN250321C00207500	7175	5009	0.32	2025-03-14 15:59:56-04:00	AMZN250321P00207500	173.0	3407	0.34
212.5	AMZN250321C00212500	11946	5407	0.33	2025-03-14 15:59:16-04:00	AMZN250321P00212500	123.0	3205	0.35

TOP 10 OPENINTEREST_PUT for AMZN [LAST: 197.95] for expiration date: 2025-03-21





TOP 10 VOLUME_CALL for AMZN [LAST: 197.95] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

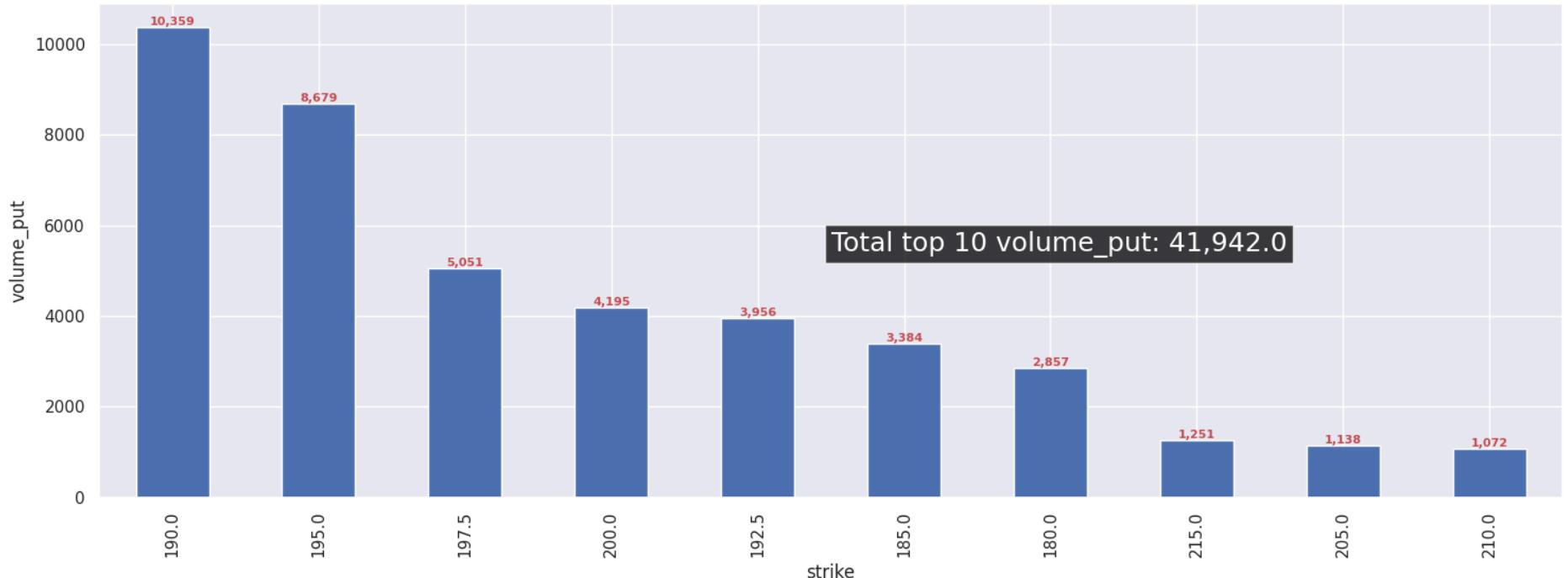
The last closing price of AMZN is: 197.95

price_range: 178<=strike<=218

total_val: 41942.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
190.0	AMZN250321C00190000	2830	4557	0.41	2025-03-14 15:59:06-04:00	AMZN250321P00190000	10359.0	23597	0.37
195.0	AMZN250321C00195000	5342	8170	0.37	2025-03-14 15:58:29-04:00	AMZN250321P00195000	8679.0	10263	0.35
197.5	AMZN250321C00197500	10597	4393	0.36	2025-03-14 15:59:20-04:00	AMZN250321P00197500	5051.0	3104	0.34
200.0	AMZN250321C00200000	15911	20932	0.34	2025-03-14 15:59:55-04:00	AMZN250321P00200000	4195.0	14523	0.33
192.5	AMZN250321C00192500	2894	2795	0.38	2025-03-14 15:59:22-04:00	AMZN250321P00192500	3956.0	2580	0.36
185.0	AMZN250321C00185000	2142	5168	0.47	2025-03-14 15:58:49-04:00	AMZN250321P00185000	3384.0	12694	0.46
180.0	AMZN250321C00180000	1015	3777	0.53	2025-03-14 15:47:12-04:00	AMZN250321P00180000	2857.0	11934	0.44
215.0	AMZN250321C00215000	4626	18692	0.34	2025-03-14 15:59:44-04:00	AMZN250321P00215000	1251.0	12283	0.36
205.0	AMZN250321C00205000	15752	17782	0.33	2025-03-14 15:59:44-04:00	AMZN250321P00205000	1138.0	13724	0.31
210.0	AMZN250321C00210000	21959	23012	0.33	2025-03-14 15:59:52-04:00	AMZN250321P00210000	1072.0	12959	0.32

TOP 10 VOLUME_PUT for AMZN [LAST: 197.95] for expiration date: 2025-03-21



i: AMD

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

The last closing price of AMD is: 100.97

price_range: 81<=strike<=121

total_val: 144926

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
120.0	AMD250321C00120000	2888	35634	0.57	2025-03-14 15:54:58-04:00	AMD250321P00120000	1749.0	6318	0.52 ↘
115.0	AMD250321C00115000	1145	32095	0.50	2025-03-14 15:59:37-04:00	AMD250321P00115000	548.0	20364	0.55 ↗
110.0	AMD250321C00110000	3041	21966	0.44	2025-03-14 15:59:57-04:00	AMD250321P00110000	558.0	26013	0.55 ↗
100.0	AMD250321C00100000	7450	18474	0.46	2025-03-14 15:59:51-04:00	AMD250321P00100000	8560.0	26729	0.44 ↘
105.0	AMD250321C00105000	11814	15494	0.42	2025-03-14 15:59:58-04:00	AMD250321P00105000	617.0	9978	0.43 ↘

101.0	AMD250321C00101000	5090	5141	0.44	2025-03-14 15:59:40-04:00	AMD250321P00101000	1411.0	1657	0.43
103.0	AMD250321C00103000	12147	4785	0.43	2025-03-14 15:59:36-04:00	AMD250321P00103000	316.0	1582	0.43
95.0	AMD250321C00095000	354	4660	0.51	2025-03-14 15:45:12-04:00	AMD250321P00095000	2200.0	16690	0.48
104.0	AMD250321C00104000	10712	3405	0.42	2025-03-14 15:59:38-04:00	AMD250321P00104000	508.0	515	0.42
102.0	AMD250321C00102000	3628	3272	0.44	2025-03-14 15:59:56-04:00	AMD250321P00102000	1628.0	1487	0.43

TOP 10 OPENINTEREST_CALL for AMD [LAST: 100.97] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

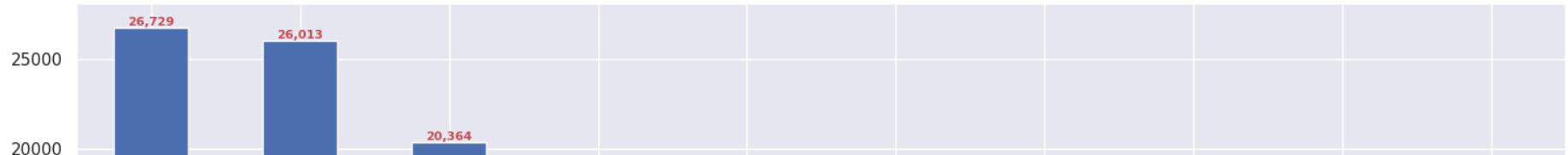
The last closing price of AMD is: 100.97

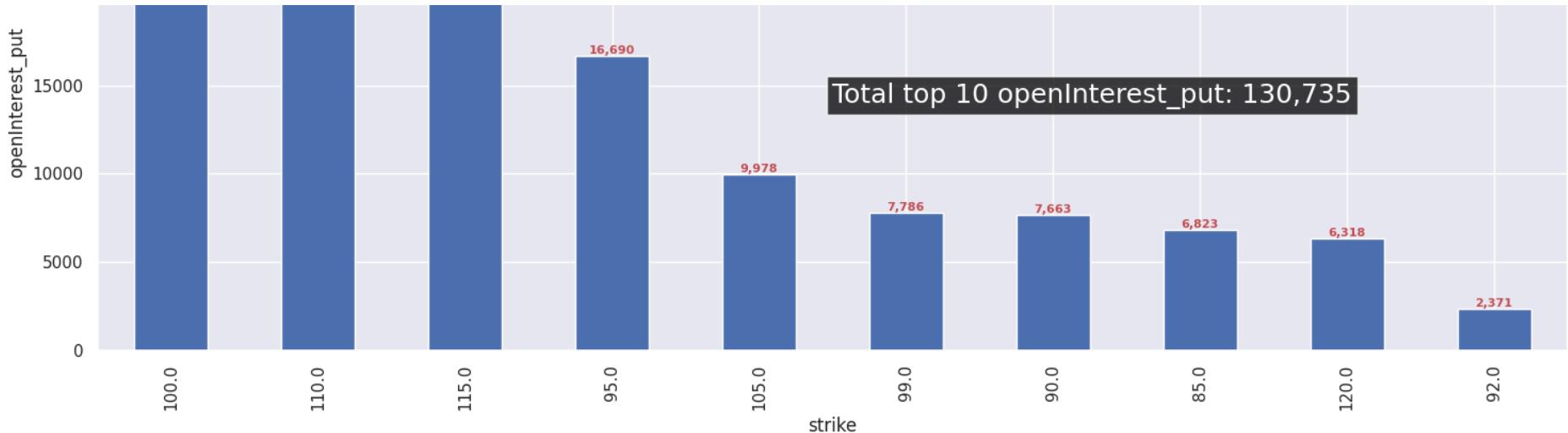
price_range: 81<=strike<=121

total_val: 130735

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
100.0	AMD250321C00100000	7450	18474	0.46	2025-03-14 15:59:51-04:00	AMD250321P00100000	8560.0	26729	0.44
110.0	AMD250321C00110000	3041	21966	0.44	2025-03-14 15:59:57-04:00	AMD250321P00110000	558.0	26013	0.55
115.0	AMD250321C00115000	1145	32095	0.50	2025-03-14 15:59:37-04:00	AMD250321P00115000	548.0	20364	0.55
95.0	AMD250321C00095000	354	4660	0.51	2025-03-14 15:45:12-04:00	AMD250321P00095000	2200.0	16690	0.48
105.0	AMD250321C00105000	11814	15494	0.42	2025-03-14 15:59:58-04:00	AMD250321P00105000	617.0	9978	0.43
99.0	AMD250321C00099000	1008	2135	0.46	2025-03-14 15:59:16-04:00	AMD250321P00099000	1628.0	7786	0.44
90.0	AMD250321C00090000	99	1695	0.61	2025-03-14 15:38:06-04:00	AMD250321P00090000	1334.0	7663	0.55
85.0	AMD250321C00085000	8	1352	0.67	2025-03-14 10:33:09-04:00	AMD250321P00085000	1029.0	6823	0.66
120.0	AMD250321C00120000	2888	35634	0.57	2025-03-14 15:54:58-04:00	AMD250321P00120000	1749.0	6318	0.52
92.0	AMD250321C00092000	77	233	0.56	2025-03-14 15:48:29-04:00	AMD250321P00092000	264.0	2371	0.51

TOP 10 OPENINTEREST_PUT for AMD [LAST: 100.97] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

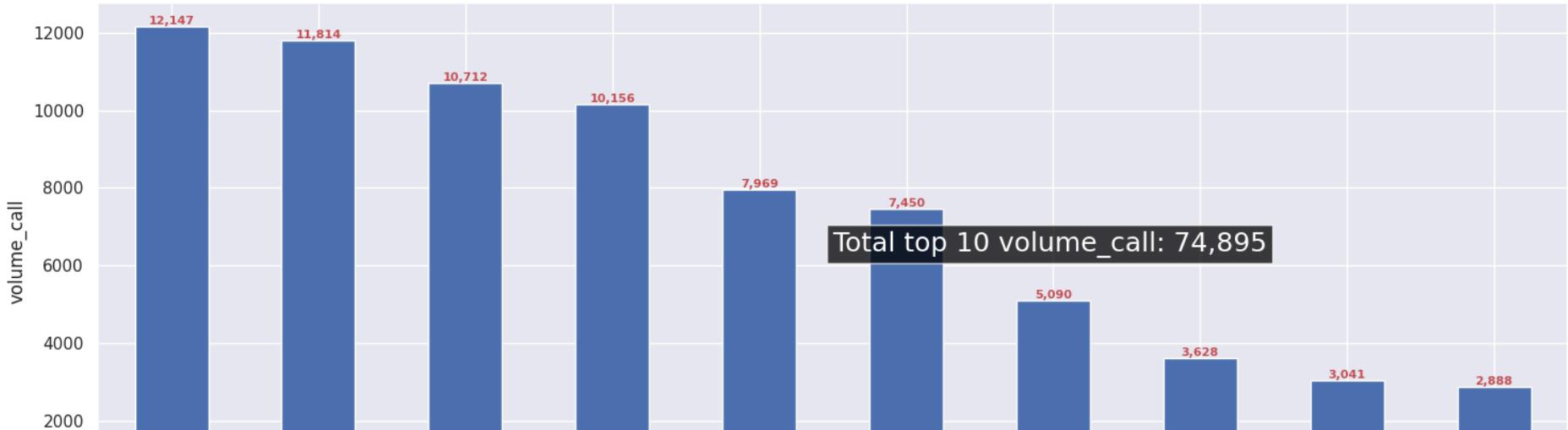
The last closing price of AMD is: 100.97

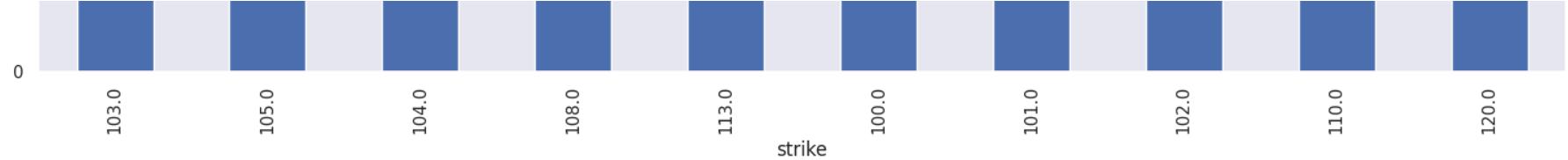
price_range: 81<=strike<=121

total_val: 74895

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
103.0	AMD250321C00103000	12147	4785	0.43	2025-03-14 15:59:36-04:00	AMD250321P00103000	316.0	1582	0.43
105.0	AMD250321C00105000	11814	15494	0.42	2025-03-14 15:59:58-04:00	AMD250321P00105000	617.0	9978	0.43
104.0	AMD250321C00104000	10712	3405	0.42	2025-03-14 15:59:38-04:00	AMD250321P00104000	508.0	515	0.42
108.0	AMD250321C00108000	10156	2701	0.42	2025-03-14 15:59:02-04:00	AMD250321P00108000	83.0	502	0.51
113.0	AMD250321C00113000	7969	823	0.47	2025-03-14 15:58:30-04:00	AMD250321P00113000	3.0	395	0.56
100.0	AMD250321C00100000	7450	18474	0.46	2025-03-14 15:59:51-04:00	AMD250321P00100000	8560.0	26729	0.44
101.0	AMD250321C00101000	5090	5141	0.44	2025-03-14 15:59:40-04:00	AMD250321P00101000	1411.0	1657	0.43
102.0	AMD250321C00102000	3628	3272	0.44	2025-03-14 15:59:56-04:00	AMD250321P00102000	1628.0	1487	0.43
110.0	AMD250321C00110000	3041	21966	0.44	2025-03-14 15:59:57-04:00	AMD250321P00110000	558.0	26013	0.55
120.0	AMD250321C00120000	2888	35634	0.57	2025-03-14 15:54:58-04:00	AMD250321P00120000	1749.0	6318	0.52

TOP 10 VOLUME_CALL for AMD [LAST: 100.97] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

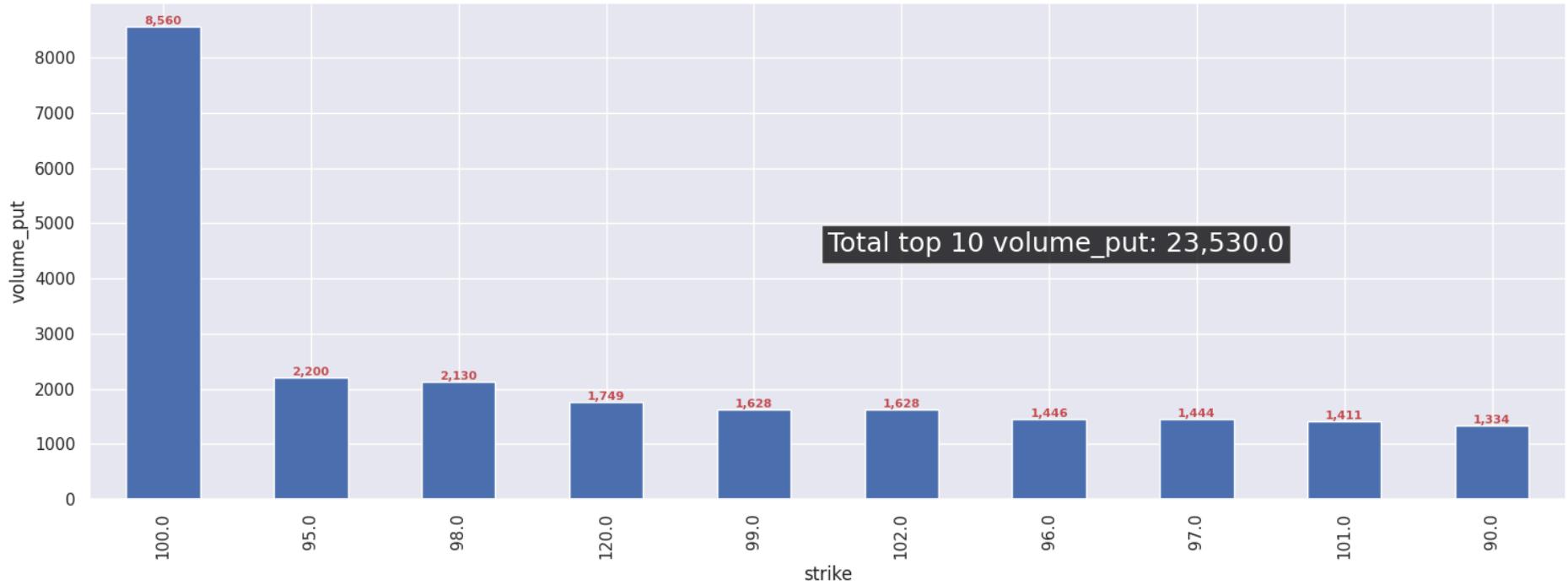
The last closing price of AMD is: 100.97

price_range: 81<=strike<=121

total_val: 23530.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
100.0	AMD250321C00100000	7450	18474	0.46	2025-03-14 15:59:51-04:00	AMD250321P00100000	8560.0	26729	0.44
95.0	AMD250321C00095000	354	4660	0.51	2025-03-14 15:45:12-04:00	AMD250321P00095000	2200.0	16690	0.48
98.0	AMD250321C00080000	851	2624	0.47	2025-03-14 15:41:11-04:00	AMD250321P00080000	2130.0	1947	0.45
120.0	AMD250321C00120000	2888	35634	0.57	2025-03-14 15:54:58-04:00	AMD250321P00120000	1749.0	6318	0.52
99.0	AMD250321C00099000	1008	2135	0.46	2025-03-14 15:59:16-04:00	AMD250321P00099000	1628.0	7786	0.44
102.0	AMD250321C00102000	3628	3272	0.44	2025-03-14 15:59:56-04:00	AMD250321P00102000	1628.0	1487	0.43
96.0	AMD250321C00096000	281	454	0.49	2025-03-14 15:56:47-04:00	AMD250321P00096000	1446.0	1620	0.47
97.0	AMD250321C00097000	336	715	0.49	2025-03-14 15:56:59-04:00	AMD250321P00097000	1444.0	1675	0.46
101.0	AMD250321C00101000	5090	5141	0.44	2025-03-14 15:59:40-04:00	AMD250321P00101000	1411.0	1657	0.43
90.0	AMD250321C00090000	99	1695	0.61	2025-03-14 15:38:06-04:00	AMD250321P00090000	1334.0	7663	0.55

TOP 10 VOLUME_PUT for AMD [LAST: 100.97] for expiration date: 2025-03-21



i: MSTR

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19', '2025-10-17',

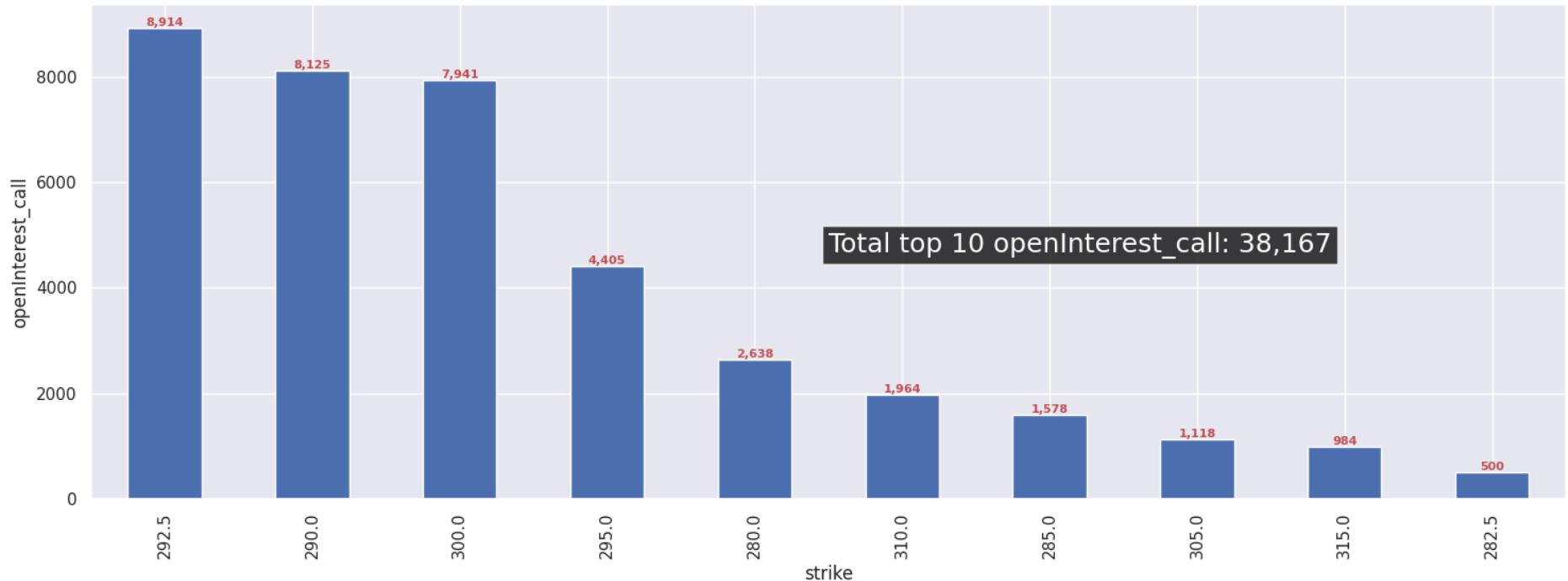
Applied expiration date: 2025-03-21

The last closing price of MSTR is: 297.49

price range: 277<=strike<=317

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
292.5	MSTR250321C00292500	2095.0	8914	0.87	2025-03-14 15:59:47-04:00	MSTR250321P00292500	480.0	150	0.86
290.0	MSTR250321C00290000	6681.0	8125	0.87	2025-03-14 15:59:50-04:00	MSTR250321P00290000	3801.0	1587	0.86
300.0	MSTR250321C00300000	19756.0	7941	0.85	2025-03-14 15:59:57-04:00	MSTR250321P00300000	1587.0	3591	0.85
295.0	MSTR250321C00295000	3364.0	4405	0.87	2025-03-14 15:59:19-04:00	MSTR250321P00295000	3282.0	842	0.85
280.0	MSTR250321C00280000	5557.0	2638	0.90	2025-03-14 15:59:28-04:00	MSTR250321P00280000	3125.0	2093	0.91
310.0	MSTR250321C00310000	3483.0	1964	0.85	2025-03-14 15:59:24-04:00	MSTR250321P00310000	171.0	1299	0.84
285.0	MSTR250321C00285000	2246.0	1578	0.89	2025-03-14 15:58:45-04:00	MSTR250321P00285000	1304.0	886	0.85
305.0	MSTR250321C00305000	8335.0	1118	0.86	2025-03-14 15:59:17-04:00	MSTR250321P00305000	121.0	281	0.84
315.0	MSTR250321C00315000	5353.0	984	0.85	2025-03-14 15:59:58-04:00	MSTR250321P00315000	49.0	981	0.83
282.5	MSTR250321C00282500	746.0	500	0.89	2025-03-14 15:58:23-04:00	MSTR250321P00282500	535.0	81	0.86

TOP 10 OPENINTEREST_CALL for MSTR [LAST: 297.49] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-09-19', '2025-10-17')

Applied expiration date: 2025-03-21

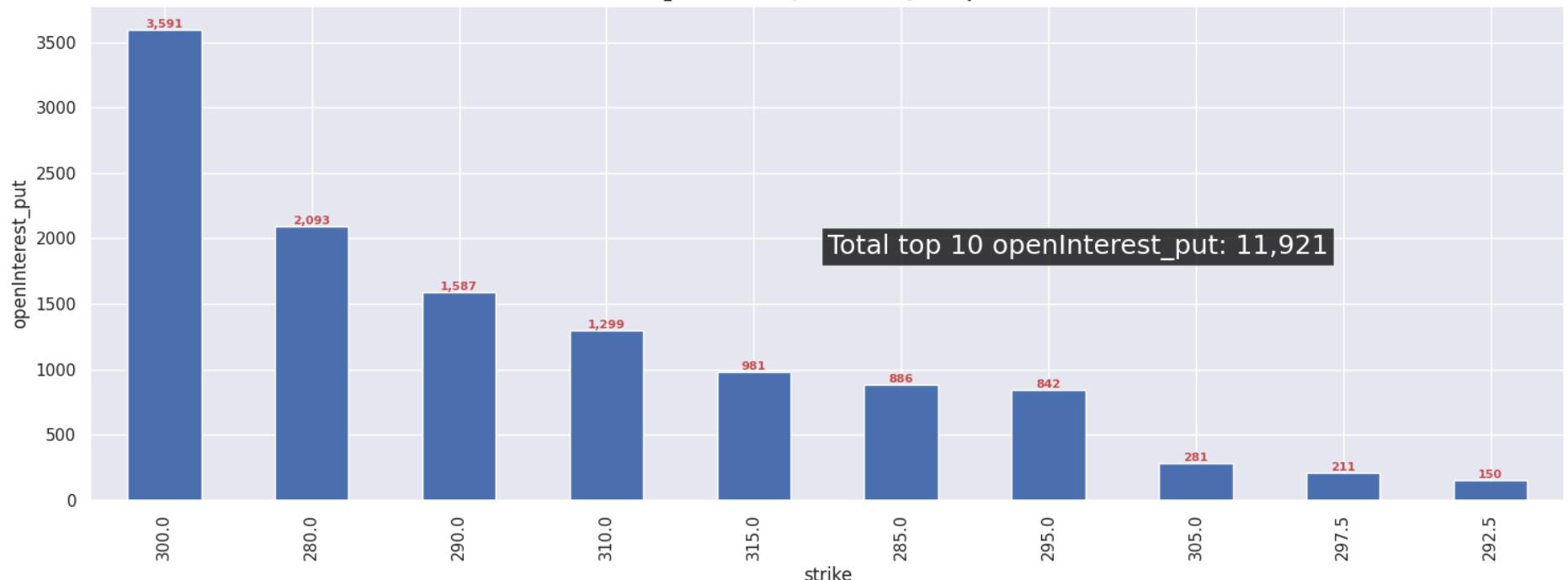
The last closing price of MSTR is: 297.49

price_range: 277<=strike<=317

total_val: 11921

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
300.0	MSTR250321C00300000	19756.0	7941	0.85	2025-03-14 15:59:57-04:00	MSTR250321P00300000	1587.0	3591	0.85
280.0	MSTR250321C00280000	5557.0	2638	0.90	2025-03-14 15:59:28-04:00	MSTR250321P00280000	3125.0	2093	0.91
290.0	MSTR250321C00290000	6681.0	8125	0.87	2025-03-14 15:59:50-04:00	MSTR250321P00290000	3801.0	1587	0.86
310.0	MSTR250321C00310000	3483.0	1964	0.85	2025-03-14 15:59:24-04:00	MSTR250321P00310000	171.0	1299	0.84
315.0	MSTR250321C00315000	5353.0	984	0.85	2025-03-14 15:59:58-04:00	MSTR250321P00315000	49.0	981	0.83
285.0	MSTR250321C00285000	2246.0	1578	0.89	2025-03-14 15:58:45-04:00	MSTR250321P00285000	1304.0	886	0.85
295.0	MSTR250321C00295000	3364.0	4405	0.87	2025-03-14 15:59:19-04:00	MSTR250321P00295000	3282.0	842	0.85
305.0	MSTR250321C00305000	8335.0	1118	0.86	2025-03-14 15:59:17-04:00	MSTR250321P00305000	121.0	281	0.84
297.5	MSTR250321C00297500	985.0	499	0.86	2025-03-14 15:59:42-04:00	MSTR250321P00297500	105.0	211	0.86
292.5	MSTR250321C00292500	2095.0	8914	0.87	2025-03-14 15:59:47-04:00	MSTR250321P00292500	480.0	150	0.86

TOP 10 OPENINTEREST_PUT for MSTR [LAST: 297.49] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-09-19', '2025-10-17'),

Applied expiration date: 2025-03-21

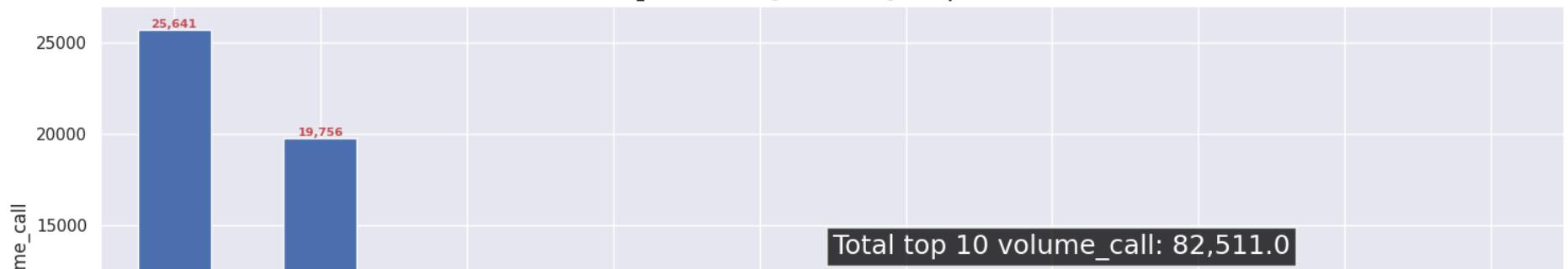
The last closing price of MSTR is: 297.49

price_range: 277<=strike<=317

total_val: 82511.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
302.5	MSTR250321C00302500	25641.0	448	0.86	2025-03-14 15:59:13-04:00	MSTR250321P00302500	86.0	83	0.84
300.0	MSTR250321C00300000	19756.0	7941	0.85	2025-03-14 15:59:57-04:00	MSTR250321P00300000	1587.0	3591	0.85
305.0	MSTR250321C00305000	8335.0	1118	0.86	2025-03-14 15:59:17-04:00	MSTR250321P00305000	121.0	281	0.84
290.0	MSTR250321C00290000	6681.0	8125	0.87	2025-03-14 15:59:50-04:00	MSTR250321P00290000	3801.0	1587	0.86
280.0	MSTR250321C00280000	5557.0	2638	0.90	2025-03-14 15:59:28-04:00	MSTR250321P00280000	3125.0	2093	0.91
315.0	MSTR250321C00315000	5353.0	984	0.85	2025-03-14 15:59:58-04:00	MSTR250321P00315000	49.0	981	0.83
310.0	MSTR250321C00310000	3483.0	1964	0.85	2025-03-14 15:59:24-04:00	MSTR250321P00310000	171.0	1299	0.84
295.0	MSTR250321C00295000	3364.0	4405	0.87	2025-03-14 15:59:19-04:00	MSTR250321P00295000	3282.0	842	0.85
285.0	MSTR250321C00285000	2246.0	1578	0.89	2025-03-14 15:58:45-04:00	MSTR250321P00285000	1304.0	886	0.85
292.5	MSTR250321C00292500	2095.0	8914	0.87	2025-03-14 15:59:47-04:00	MSTR250321P00292500	480.0	150	0.84

TOP 10 VOLUME_CALL for MSTR [LAST: 297.49] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-09-19', '2025-10-17',

Applied expiration date: 2025-03-21

The last closing price of MSTR is: 297.49

price_range: 277<=strike<=317

total_val: 16616.0

strike	contractSymbol_call	volume_call	openInterest_call	impliedVolatility_call	lastTradeDate_call	contractSymbol_put	volume_put	openInterest_put	impliedVolatility_put
290.0	MSTR250321C00290000	6681.0	8125	0.87	2025-03-14 15:59:50-04:00	MSTR250321P00290000	3801.0	1587	0.86
295.0	MSTR250321C00295000	3364.0	4405	0.87	2025-03-14 15:59:19-04:00	MSTR250321P00295000	3282.0	842	0.85
280.0	MSTR250321C00280000	5557.0	2638	0.90	2025-03-14 15:59:28-04:00	MSTR250321P00280000	3125.0	2093	0.91
300.0	MSTR250321C00300000	19756.0	7941	0.85	2025-03-14 15:59:57-04:00	MSTR250321P00300000	1587.0	3591	0.85
287.5	MSTR250321C00287500	982.0	388	0.88	2025-03-14 15:54:30-04:00	MSTR250321P00287500	1361.0	44	0.87
285.0	MSTR250321C00285000	2246.0	1578	0.89	2025-03-14 15:58:45-04:00	MSTR250321P00285000	1304.0	886	0.86
277.5	MSTR250321C00277500	902.0	373	0.93	2025-03-14 15:58:21-04:00	MSTR250321P00277500	970.0	137	0.91
282.5	MSTR250321C00282500	746.0	500	0.89	2025-03-14 15:58:23-04:00	MSTR250321P00282500	535.0	81	0.88
292.5	MSTR250321C00292500	2095.0	8914	0.87	2025-03-14 15:59:47-04:00	MSTR250321P00292500	480.0	150	0.86
310.0	MSTR250321C00310000	3483.0	1964	0.85	2025-03-14 15:59:24-04:00	MSTR250321P00310000	171.0	1299	0.84

TOP 10 VOLUME_PUT for MSTR [LAST: 297.49] for expiration date: 2025-03-21



2:

2:

2:

3:

2:

strike

2:

2:

2:

3:


```
1 #This is the date when the programming was run
2 currnet_datetime=datetime.now(local_tz)
3 current_month=currnet_datetime.strftime('%b');current_day=currnet_datetime.day
4 print(f'current_month: {current_month}, current_day: {current_day}')
5 run_day=f'{current_month.upper()}{current_day}'
6 print(f'run_day: {run_day}')
```

```
⤵ current_month: Mar, current_day: 15
run_day: MAR15
```

```
1
2 tickers=stocks
3 for c,ticker in enumerate(tickers):
4     #for debugging
5     #if ticker not in ['NVDA']:continue
6     total_weeks=1
7     strike_range=15
8     if ticker in indices:
9         strike_range=10
10    total_weeks=2
11    if ticker in ['NVDA']:strike_range=10
12    counter=f'{c+1}/{len(tickers)}'
13
14
15    print(f'{counter:>10} WORKING WITH {ticker:>5} strike_range: {strike_range:<10} total weeks: {total_weeks}\n')
16    for i in range(total_weeks):
17        opt_obj.get_call_put_interest_plot(ticker,week_index=i,run_day=run_day,strike_range=strike_range)
```



1/9 WORKING WITH NVDA strike_range: 10

total weeks: 1

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

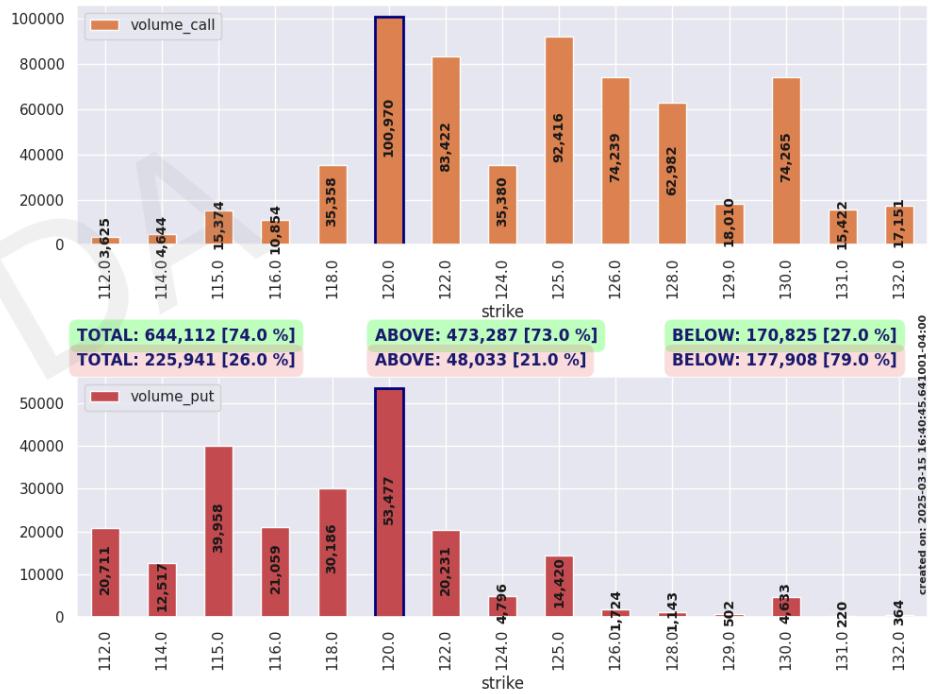
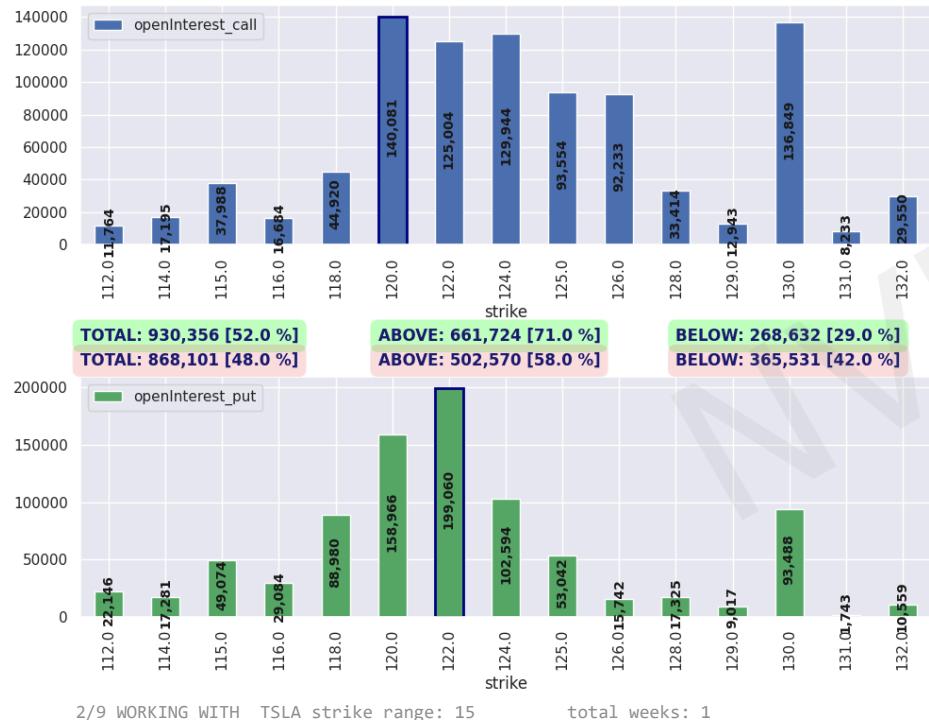
Applied expiration date: 2025-03-21

The last closing price of NVDA is: 121.67

price_range: 112<=strike<=132

save_name: stock_information MAR15-NVDA-exp-03-21-voloi

VOLUME AND OPEN INTEREST for NVDA [LAST: 121.67] for expiration date: 2025-03-21



2/9 WORKING WITH TSLA strike_range: 15

total weeks: 1

Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

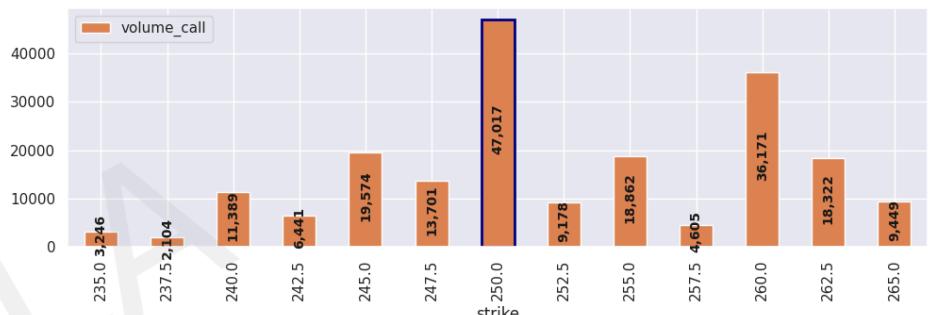
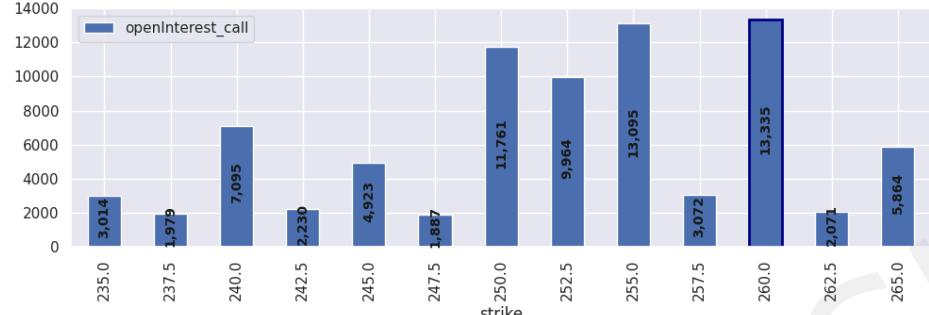
Applied expiration date: 2025-03-21

The last closing price of TSLA is: 249.98

price_range: 235<=strike<=265

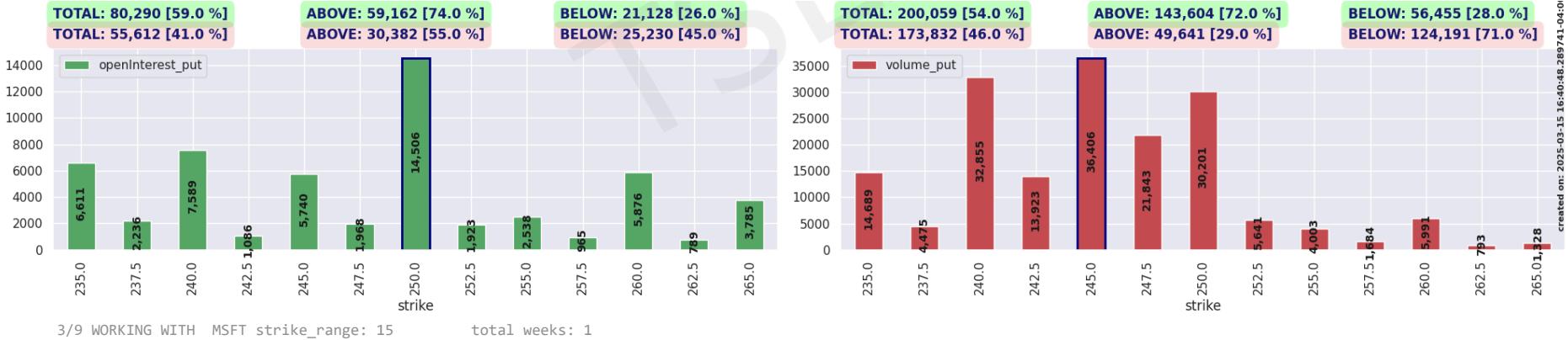
save_name: stock_information MAR15-TSLA-exp-03-21-voloi

VOLUME AND OPEN INTEREST for TSLA [LAST: 249.98] for expiration date: 2025-03-21



created on: 2025-03-15 16:40:45.641001-06:00

3



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21

The last closing price of MSFT is: 388.56

price_range: 374<=strike<=404

save_name: stock_information MAR15-MSFT-exp-03-21-voloi

VOLUME AND OPEN INTEREST for MSFT [LAST: 388.56] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21

The last closing price of META is: 607.6

price_range: 593<=strike<=623

save_name: stock_information MAR15-META-exp-03-21-voloi

created on: 2025-03-15 15:40:48.28941-04:00

created on: 2025-03-15 15:40:50.632264-04:00

VOLUME AND OPEN INTEREST for META [LAST: 607.6] for expiration date: 2025-03-21



Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19')

Applied expiration date: 2025-03-21

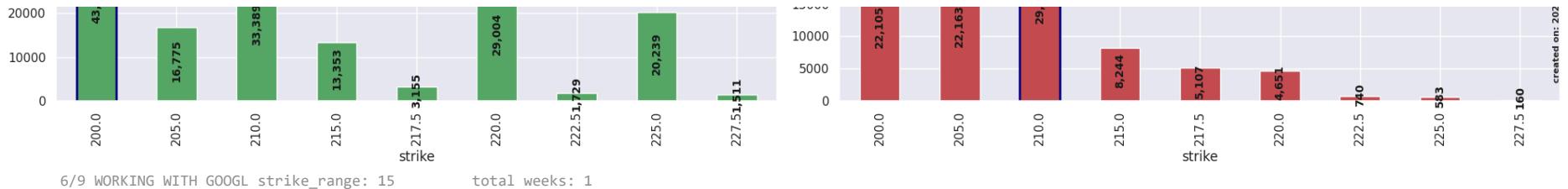
The last closing price of AAPL is: 213.49

price_range: 198<=strike<=228

save_name: stock_information MAR15-AAPL-exp-03-21-voloi

VOLUME AND OPEN INTEREST for AAPL [LAST: 213.49] for expiration date: 2025-03-21





Available expiration dates: ('2025-03-21', '2025-03-28', '2025-04-04', '2025-04-11', '2025-04-17', '2025-04-25', '2025-05-16', '2025-06-20', '2025-07-18', '2025-08-15', '2025-09-19',

Applied expiration date: 2025-03-21

The last closing price of GOOGL is: 165.49

price_range: 150<=strike<=180

save_name: stock_information MAR15-GOOGL-exp-03-21-voloi

VOLUME AND OPEN INTERESET for GOOGL [LAST: 165.49] for expiration date: 2025-03-21

