```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

df = pd.read_csv("results.csv")
df
```

```
   Company       High  Hour             Datetime
0     BYND  37.804901     9  2022/05/02 09:55:00
1     BYND  37.990002    10  2022/05/02 10:30:00
2     BYND  37.590000    11  2022/05/02 11:30:00
3     BYND  37.330002    12  2022/05/02 12:20:00
4     BYND  36.570000    13  2022/05/02 13:05:00
..     ...        ...   ...                  ...
68     TTD  60.979900    12  2022/05/02 12:20:00
69     TTD  59.939999    13  2022/05/02 13:00:00
70     TTD  59.939999    13  2022/05/02 13:10:00
71     TTD  60.279999    14  2022/05/02 14:50:00
72     TTD  62.119999    15  2022/05/02 15:55:00

[73 rows x 4 columns]
```

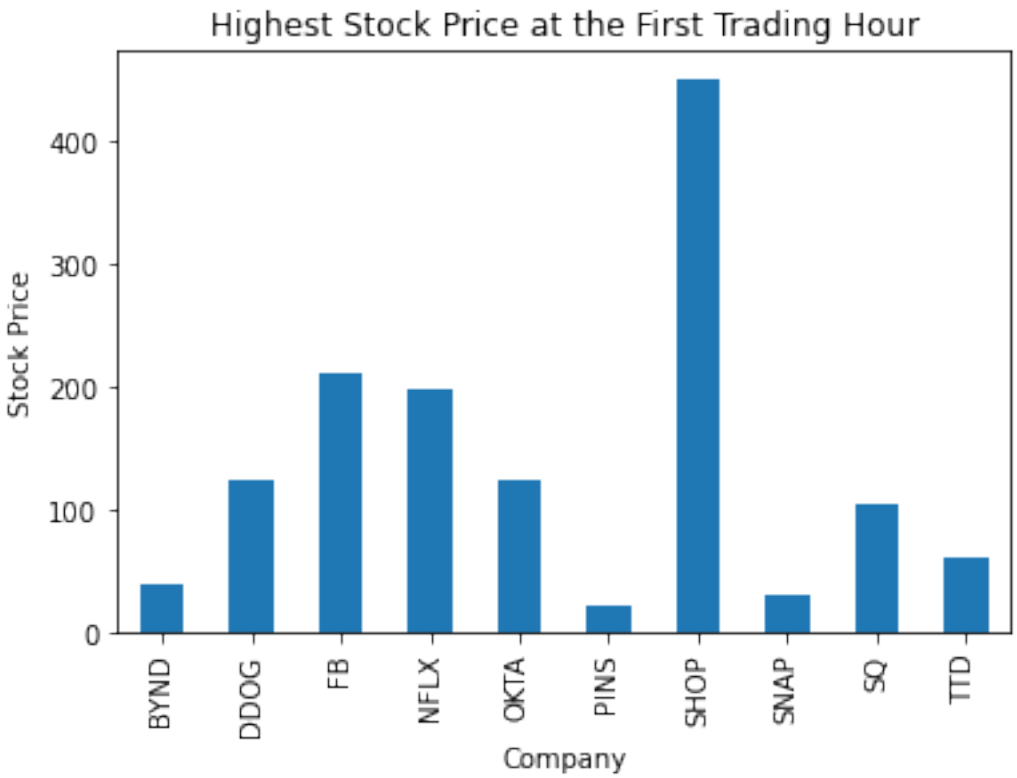
Question1: Highest Stock Price at the First Trading Hour (A Bar Chart: Each bar refers to a company)

```
df_q1 = df[df["Hour"]==9]
df_q1
```

```
   Company        High  Hour             Datetime
0     BYND   37.804901     9  2022/05/02 09:55:00
7     DDOG  123.339996     9  2022/05/02 09:55:00
14      FB  210.729996     9  2022/05/02 09:55:00
21    NFLX  198.600006     9  2022/05/02 09:55:00
28    OKTA  123.349998     9  2022/05/02 09:55:00
35    PINS   21.240000     9  2022/05/02 09:55:00
43    SHOP  451.000000     9  2022/05/02 09:40:00
50    SNAP   29.540001     9  2022/05/02 09:50:00
58      SQ  103.069901     9  2022/05/02 09:55:00
65     TTD   61.224998     9  2022/05/02 09:55:00
```

```
df_q1.plot.bar(x="Company", y = "High", ylabel = "Stock Price", legend
= False,
               title="Highest Stock Price at the First Trading Hour")
```

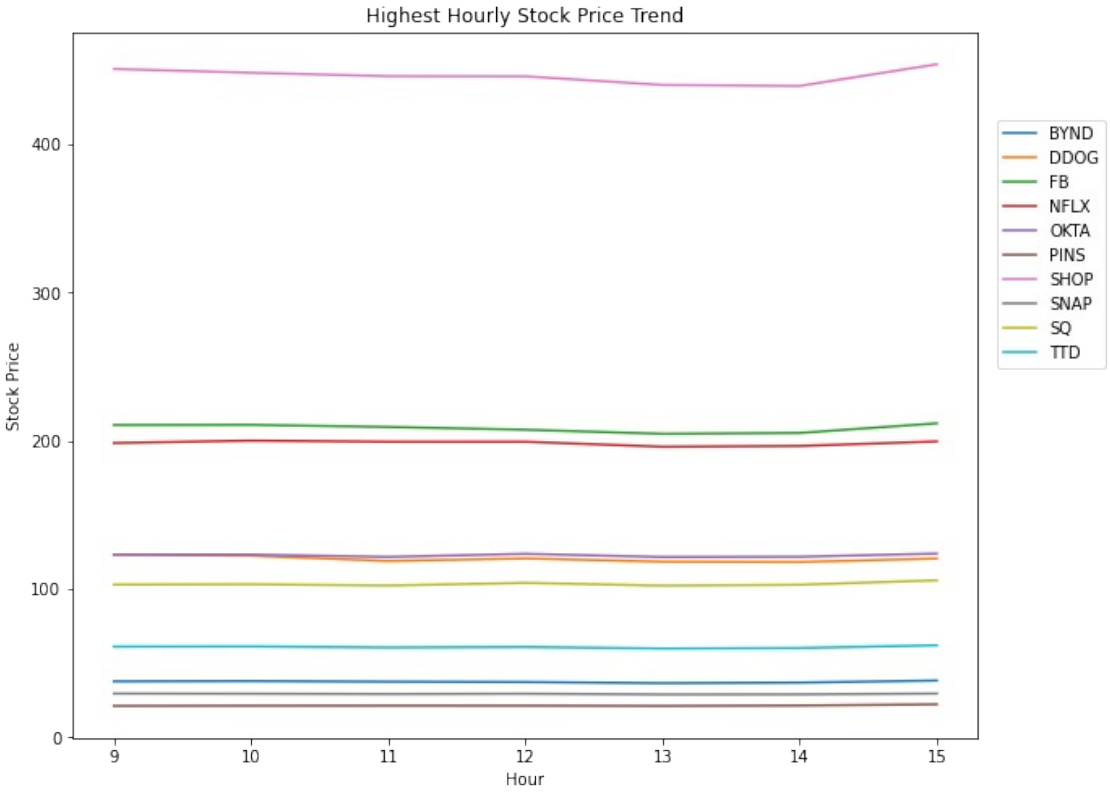
```
<AxesSubplot:title={'center':'Highest Stock Price at the First Trading
Hour'}, xlabel='Company', ylabel='Stock Price'>
```



Question2: Highest Hourly Stock Price Trend (A Line Chart: Each line refers to a company)

```
plt.figure(figsize=(10,8))
g = sns.lineplot(data = df, x="Hour", y="High", hue="Company")
g.legend(loc='center right', bbox_to_anchor=(1.15, 0.7), ncol=1)
plt.ylabel("Stock Price")
plt.title("Highest Hourly Stock Price Trend")
```

```
Text(0.5, 1.0, 'Highest Hourly Stock Price Trend')
```



Question3: Comparison of Opening and Closing Price (A Grouped Bar Chart: Each group refers to a company and the bars refer to the opening and closing prices)

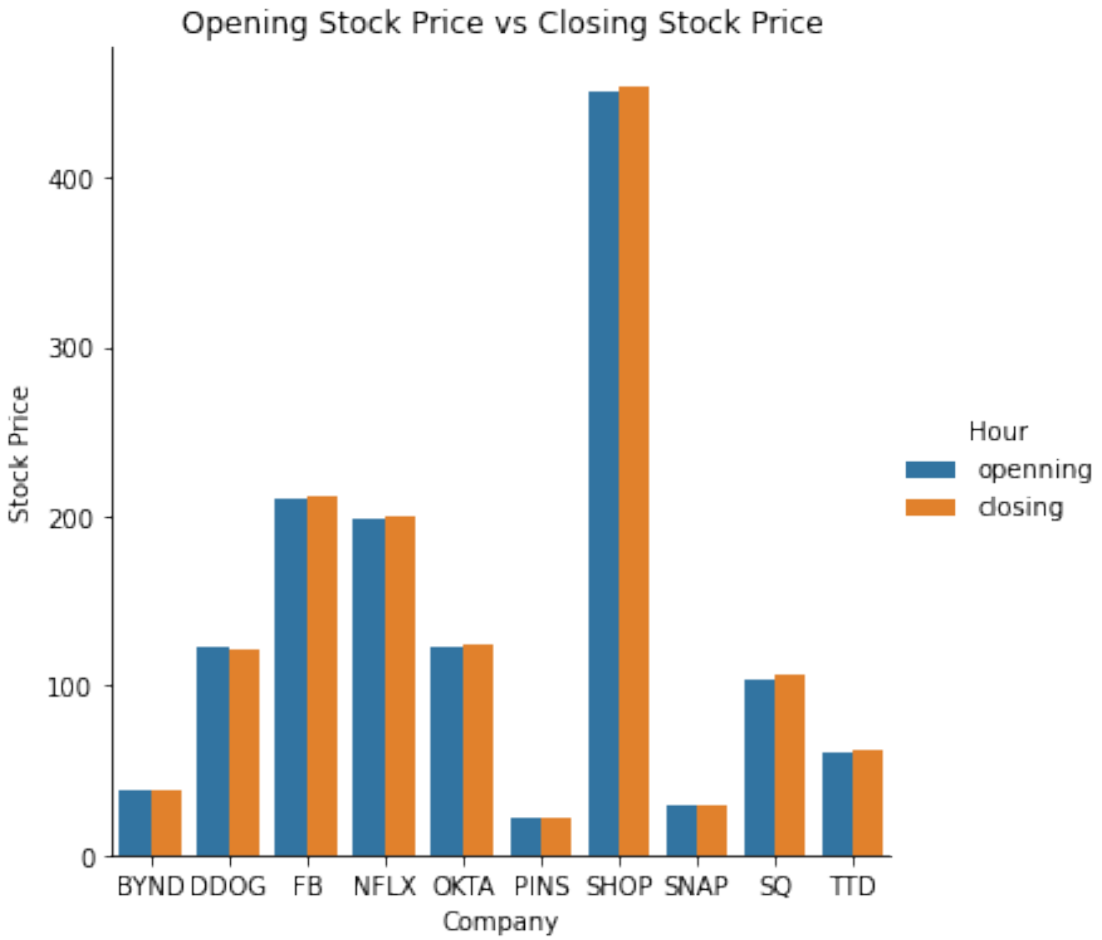
```
data=[]
for row in range(len(df)):
    if df["Hour"][row]==9:
        data.append([df["Company"][row], df["High"][row], df["Hour"]
[row]])

    if df["Hour"][row]==15:
        data.append([df["Company"][row], df["High"][row], df["Hour"]
[row]])

data = pd.DataFrame(data, columns=["Company","High", "Hour"])
data["Hour"] = data["Hour"].replace({9:"openning", 15:"closing"})
data
```

	Company	High	Hour
0	BYND	37.804901	openning
1	BYND	38.330002	closing
2	DDOG	123.339996	openning
3	DDOG	120.650002	closing
4	FB	210.729996	openning

```
5       FB  211.880005   closing
6     NFLX  198.600006  openning
7     NFLX  199.660004   closing
8     OKTA  123.349998  openning
9     OKTA  124.004997   closing
10    PINS   21.240000  openning
11    PINS   22.275000   closing
12    SHOP  451.000000  openning
13    SHOP  454.140015   closing
14    SNAP   29.540001  openning
15    SNAP   29.540001   closing
16      SQ  103.069901  openning
17      SQ  105.970001   closing
18     TTD   61.224998  openning
19     TTD   62.119999   closing
```

```
sns.catplot(data=data, kind="bar", x="Company", y="High", hue="Hour")
plt.ylabel("Stock Price")
plt.title("Opening Stock Price vs Closing Stock Price")
```

```
Text(0.5, 1.0, 'Opening Stock Price vs Closing Stock Price')
```



Question4: Average Highest Hourly Stock Price (A Bar Chart: Each bar refers to a company)

```
#To keep 1 highest price for each hour for each company, delete the duplicate rows
df = df.drop_duplicates(subset=["Company", "High", "Hour"], keep = "first")
df.reset_index(drop=True)
```

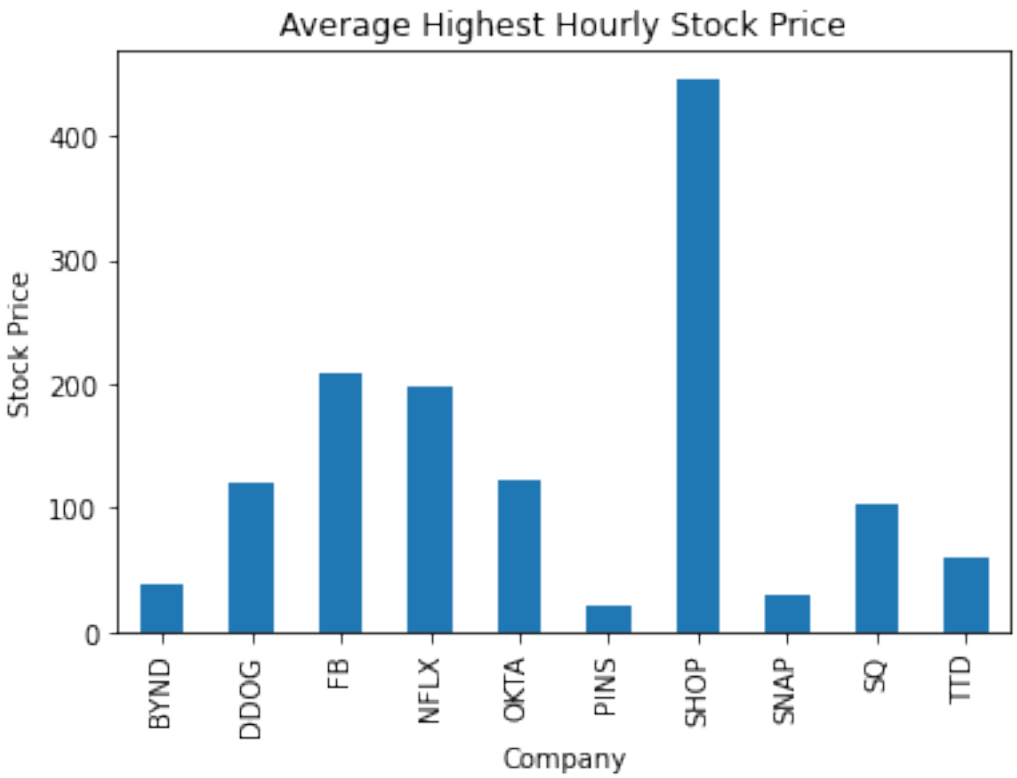
```
   Company       High  Hour             Datetime
0     BYND  37.804901     9  2022/05/02 09:55:00
1     BYND  37.990002    10  2022/05/02 10:30:00
2     BYND  37.590000    11  2022/05/02 11:30:00
3     BYND  37.330002    12  2022/05/02 12:20:00
4     BYND  36.570000    13  2022/05/02 13:05:00
..     ...        ...   ...                  ...
65     TTD  60.639999    11  2022/05/02 11:30:00
66     TTD  60.979900    12  2022/05/02 12:20:00
67     TTD  59.939999    13  2022/05/02 13:00:00
68     TTD  60.279999    14  2022/05/02 14:50:00
69     TTD  62.119999    15  2022/05/02 15:55:00

[70 rows x 4 columns]
```

```
avg_df = df[["Company", "High"]].groupby('Company').mean()
avg_df.reset_index(inplace = True)
avg_df
```

```
  Company        High
0    BYND   37.509272
1    DDOG  120.444085
2      FB  208.667143
3    NFLX  198.579099
4    OKTA  122.836442
5    PINS   21.485714
6    SHOP  446.482130
7    SNAP   29.311429
8      SQ  103.474815
9     TTD   60.933556
```

```
avg_df.plot.bar(x="Company", y="High", ylabel="Stock Price", legend = False,
                title="Average Highest Hourly Stock Price")
```

```
<AxesSubplot:title={'center':'Average Highest Hourly Stock Price'}, xlabel='Company', ylabel='Stock Price'>
```


Average Highest Hourly Stock Price
Stock Price
0
100
200
300
400
BYND
DDOG
FB
NFLX
OKTA
PINS
SHOP
SNAP
SQ
TTD
Company