In [30]:

```
#Data collection
```

In [62]:

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

In [22]:

```
df=pd.read_csv('stocks.csv',encoding="unicode_escape")
```

In [26]:

```
df
```

Out[26]:

	Ticker	Date	Open	High	Low	Close	Adj Close	Volume
0	AAPL	2023-02-07	150.639999	155.229996	150.639999	154.649994	154.414230	83322600
1	AAPL	2023-02-08	153.880005	154.580002	151.169998	151.919998	151.688400	64120100
2	AAPL	2023-02-09	153.779999	154.330002	150.419998	150.869995	150.639999	56007100
3	AAPL	2023-02-10	149.460007	151.339996	149.220001	151.009995	151.009995	57450700
4	AAPL	2023-02-13	150.949997	154.259995	150.919998	153.850006	153.850006	62199000
...	...	...	...	...	...	...	...	...
243	GOOG	2023-05-01	107.720001	108.680000	107.500000	107.709999	107.709999	20926300
244	GOOG	2023-05-02	107.660004	107.730003	104.500000	105.980003	105.980003	20343100
245	GOOG	2023-05-03	106.220001	108.129997	105.620003	106.120003	106.120003	17116300
246	GOOG	2023-05-04	106.160004	106.300003	104.699997	105.209999	105.209999	19780600
247	GOOG	2023-05-05	105.320000	106.440002	104.738998	106.214996	106.214996	20705300

248 rows × 8 columns

In [28]:

```
df.head()
```

Out[28]:

	Ticker	Date	Open	High	Low	Close	Adj Close	Volume
0	AAPL	2023-02-07	150.639999	155.229996	150.639999	154.649994	154.414230	83322600
1	AAPL	2023-02-08	153.880005	154.580002	151.169998	151.919998	151.688400	64120100

	Ticker	Date	Open	High	Low	Close	Adj Close	Volume
2	AAPL	2023-02-09	153.779999	154.330002	150.419998	150.869995	150.639999	56007100
3	AAPL	2023-02-10	149.460007	151.339996	149.220001	151.009995	151.009995	57450700
4	AAPL	2023-02-13	150.949997	154.259995	150.919998	153.850006	153.850006	62199000

In [32]:

```
#Data Preparation
```

In [36]:

```
#handle missing values
df.isnull().sum()
```

Out[36]:

```
Ticker       0
Date         0
Open         0
High         0
Low          0
Close        0
Adj Close    0
Volume       0
dtype: int64
```

In [38]:

```
df["Ticker"].unique()
```

Out[38]:

```
array(['AAPL', 'MSFT', 'NFLX', 'GOOG'], dtype=object)
```

In [40]:

```
df.describe()
```

Out[40]:

	Open	High	Low	Close	Adj Close	Volume
count	248.000000	248.000000	248.000000	248.000000	248.000000	2.480000e+02
mean	215.252093	217.919662	212.697452	215.381674	215.362697	3.208210e+07
std	91.691315	92.863023	90.147881	91.461989	91.454750	2.233590e+07
min	89.540001	90.129997	88.860001	89.349998	89.349998	2.657900e+06
25%	135.235004	137.440004	134.822495	136.347498	136.347498	1.714180e+07
50%	208.764999	212.614998	208.184998	209.920006	209.920006	2.734000e+07
75%	304.177505	307.565002	295.437500	303.942505	303.942505	4.771772e+07
max	372.410004	373.829987	361.739990	366.829987	366.829987	1.133164e+08

In [42]:

```
df.info()
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 248 entries, 0 to 247
Data columns (total 8 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
```

```
 0   Ticker     248 non-null    object
 1   Date       248 non-null    object
 2   Open       248 non-null    float64
 3   High       248 non-null    float64
 4   Low        248 non-null    float64
 5   Close      248 non-null    float64
 6   Adj Close  248 non-null    float64
 7   Volume     248 non-null    int64
dtypes: float64(5), int64(1), object(2)
memory usage: 15.6+ KB
```

In [46]:

```
df.shape
```

Out[46]:

```
(248, 8)
```

In [50]:

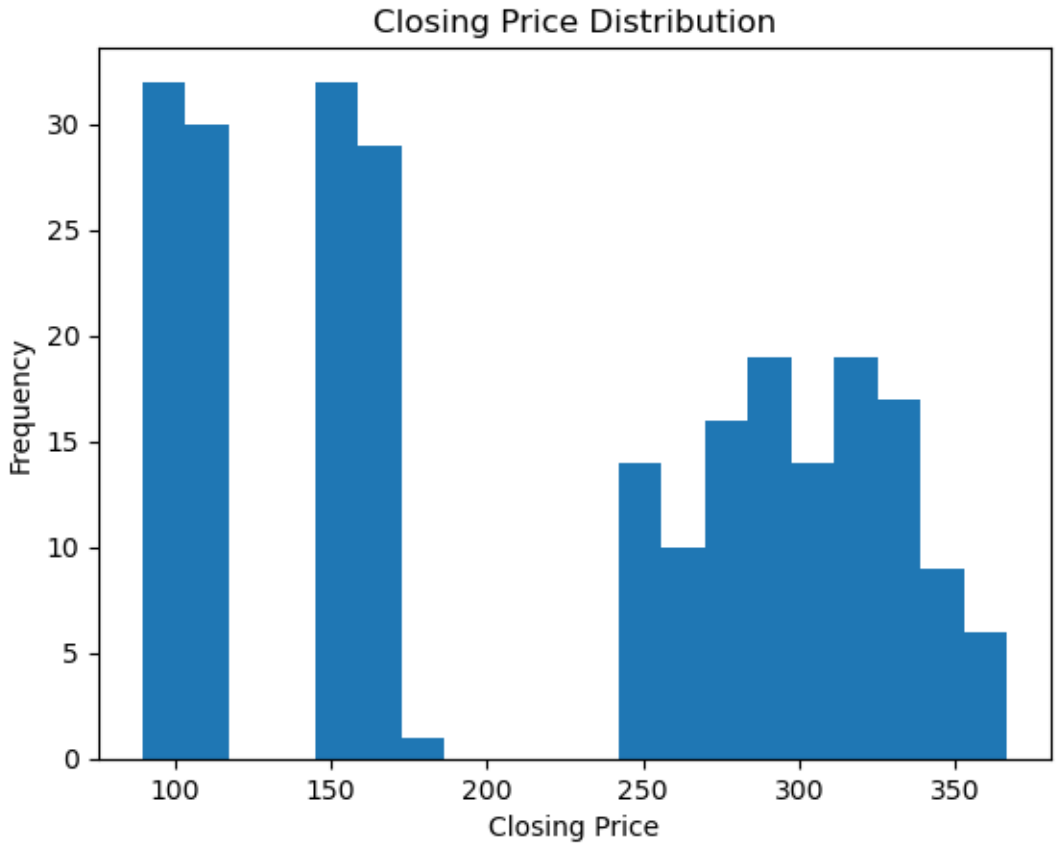
```
df.dtypes
```

Out[50]:

```
Ticker        object
Date          object
Open         float64
High         float64
Low          float64
Close        float64
Adj Close    float64
Volume         int64
dtype: object
```

In [68]:

```
#the distribution of closing prices to understand
#their range and frequency
plt.hist(df["Close"],bins=20)
plt.xlabel("Closing Price")
plt.ylabel("Frequency")
plt.title("Closing Price Distribution")
plt.show()
```

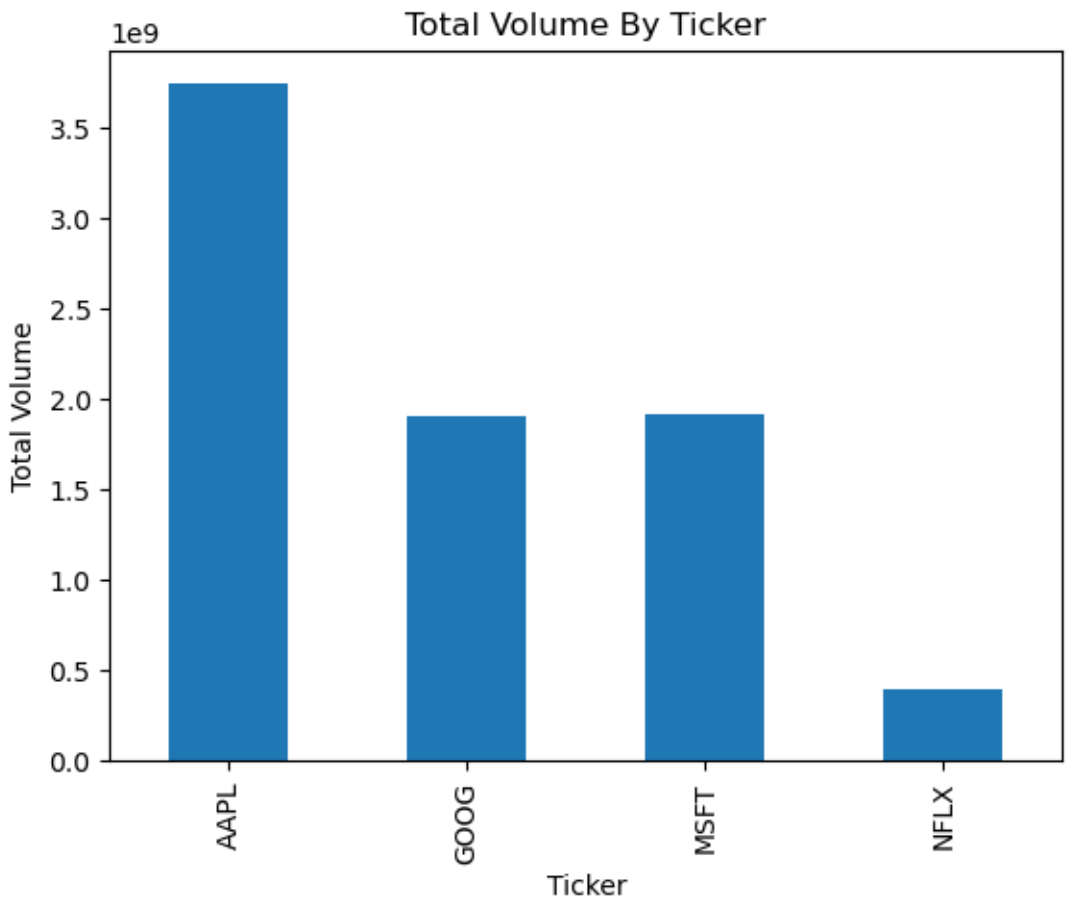


In [70]:

```
#the cumulative volume traded over time to observe and trends or spikes
ticker_volume=df.groupby("Ticker")["Volume"].sum()
ticker_volume.plot(kind="bar")
plt.xlabel("Ticker")
plt.ylabel("Total Volume")
plt.title("Total Volume By Ticker")
```

Out[70]:

```
Text(0.5, 1.0, 'Total Volume By Ticker')
```



In [72]:

```
#Exploring the relationsgip between volume
#and closing prices to identify any correlation
plt.scatter(df["Volume"],df["Close"])
plt.xlabel("Volume")
plt.ylabel("Closing Price")
plt.title("Volume vs Closing Price")
plt.show()
```

In [74]:

```
#Illustrating the distribution of the closing prices, including
#the median, quartiles, and outliers.
plt.boxplot(df['Close'])
plt.ylabel('Closing Price')
plt.title('Closing Price Distribution')
plt.show()
```

In [76]:

```
df.head()
```

Out[76]:

	Ticker	Date	Open	High	Low	Close	Adj Close	Volume
0	AAPL	2023-02-07	150.639999	155.229996	150.639999	154.649994	154.414230	83322600
1	AAPL	2023-02-08	153.880005	154.580002	151.169998	151.919998	151.688400	64120100
2	AAPL	2023-02-09	153.779999	154.330002	150.419998	150.869995	150.639999	56007100
3	AAPL	2023-02-10	149.460007	151.339996	149.220001	151.009995	151.009995	57450700
4	AAPL	2023-02-13	150.949997	154.259995	150.919998	153.850006	153.850006	62199000

In [ ]: