```
import pandas as pd
import numpy as np
```

```
df = pd.read_csv('/content/Lab_2_BEML_gain.csv')
```

```
df.head()
```

	Date	Close	Gain
0	2010-01-05	1134.60	-0.000881
1	2010-01-06	1139.60	0.004407
2	2010-01-07	1144.15	0.003993
3	2010-01-08	1144.05	-0.000087
4	2010-01-11	1137.00	-0.006162

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1738 entries, 0 to 1737
Data columns (total 3 columns):
 #   Column  Non-Null Count  Dtype  
---  ------  --------------  -----  
 0   Date    1738 non-null   object 
 1   Close   1738 non-null   float64
 2   Gain    1738 non-null   float64
dtypes: float64(2), object(1)
memory usage: 40.9+ KB
```

```
df.describe()
```

	Close	Gain
count	1738.000000	1738.000000
mean	698.183688	0.000271
std	357.378754	0.026431
max	1558.500000	0.198329

```
df.isna().sum()
```

```
Date     0
Close    0
Gain     0
dtype: int64
```

```
df.isnull().sum()
```

```
Date     0
Close    0
Gain     0
dtype: int64
```

Calculate the daily return

```
df['daily_return'] = df['Close'].pct_change()
```

```
df
```

	Date	Close	Gain	daily_return
0	2010-01-05	1134.60	-0.000881	NaN
1	2010-01-06	1139.60	0.004407	0.004407
2	2010-01-07	1144.15	0.003993	0.003993
3	2010-01-08	1144.05	-0.000087	-0.000087
4	2010-01-11	1137.00	-0.006162	-0.006162

Calculate the probabilities

```
prob_gain_3_percent = np.sum(df['daily_return'] >= 0.03) / len(df)
prob_loss_2_percent = np.sum(df['daily_return'] <= -0.02) / len(df)
```

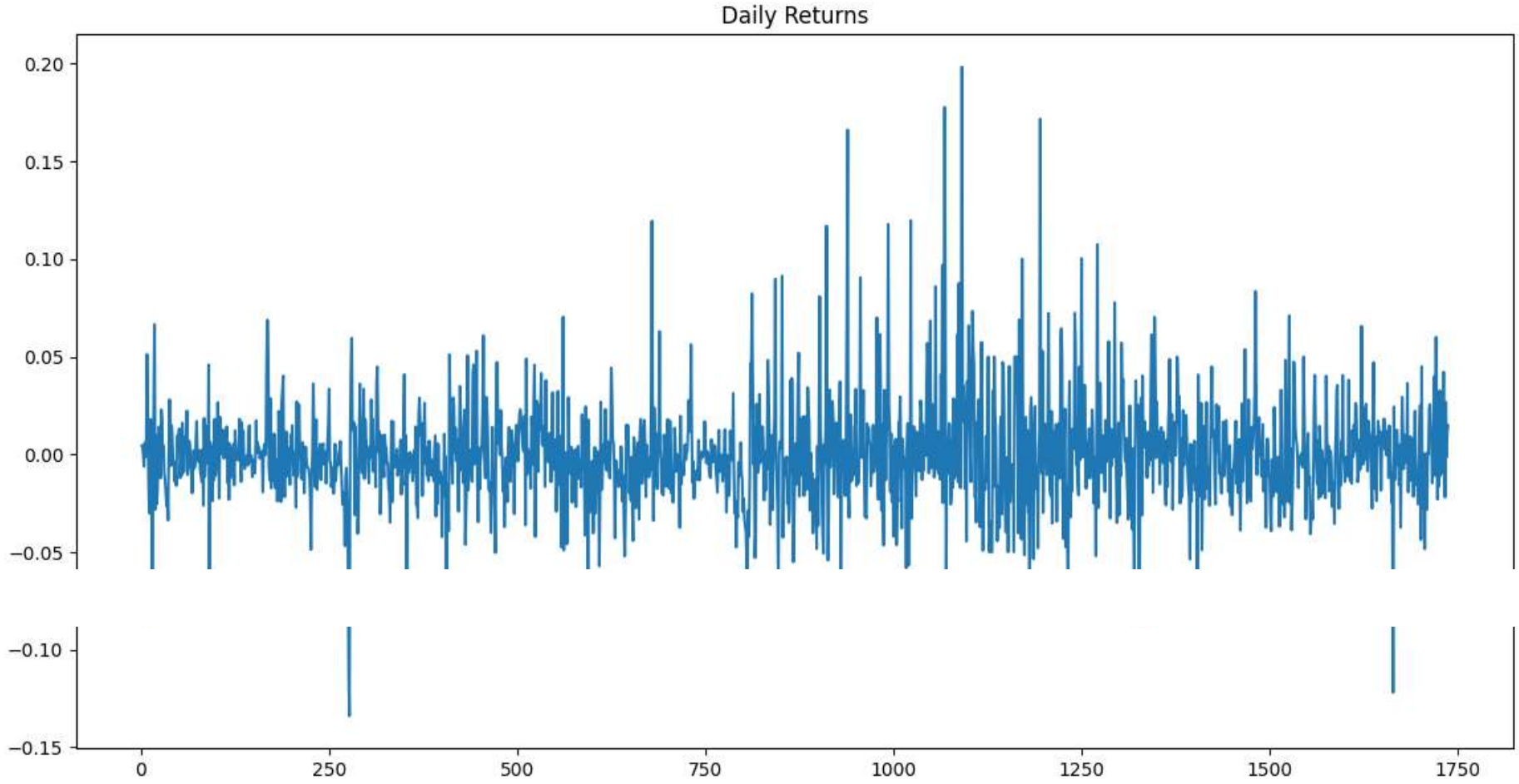
1736	2016-12-29	986.05	0.011956	0.011956

```
print(f'Probability of making a daily return of 3% or more: {prob_gain_3_percent}')
print(f'Probability of making a loss of 2% or more: {prob_loss_2_percent}')
```

```
Probability of making a daily return of 3% or more: 0.09090909090909091
Probability of making a loss of 2% or more: 0.1622554660529344
```

```
import matplotlib.pyplot as plt


plt.figure(figsize=(14, 7))
plt.plot(df['daily_return'])
plt.title('Daily Returns')
plt.show()
```


Daily Returns
0.20
0.15
0.10
0.05
0.00
−0.05
−0.10
−0.15
0
250
500
750
1000
1250
1500
1750