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TASK 3:Stock Market Prediction

Submitted by
Sneha R

Code

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In [15]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score,accuracy_score
```

In [3]:
```
df=pd.read_csv("TSLA.csv")
```

In [4]:
```
df.head()
```

Out[4]:

	Date	Open	High	Low	Close	Adj Close	Volume
0	2010-06-29	19.000000	25.00	17.540001	23.889999	23.889999	18766300
1	2010-06-30	25.790001	30.42	23.299999	23.830000	23.830000	17187100
2	2010-07-01	25.000000	25.92	20.270000	21.959999	21.959999	8218800
3	2010-07-02	23.000000	23.10	18.709999	19.200001	19.200001	5139800
4	2010-07-06	20.000000	20.00	15.830000	16.110001	16.110001	6866900

In [5]:
```
df.shape
```

Out[5]:
```
(2416, 7)
```

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In [6]:
```
df.describe()
```

Out[6]:

	Open	High	Low	Close	Adj Close	Volume
count	2416.000000	2416.000000	2416.000000	2416.000000	2416.000000	2.416000e+03
mean	186.271147	189.578224	182.916639	186.403651	186.403651	5.572722e+06
std	118.740163	120.892329	116.857591	119.136020	119.136020	4.987809e+06
min	16.139999	16.629999	14.980000	15.800000	15.800000	1.185000e+05
25%	34.342498	34.897501	33.587501	34.400002	34.400002	1.899275e+06
50%	213.035004	216.745002	208.870002	212.960007	212.960007	4.578400e+06
75%	266.450012	270.927513	262.102501	266.774994	266.774994	7.361150e+06
max	673.690002	786.140015	673.520020	780.000000	780.000000	4.706500e+07

In [7]:
```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2416 entries, 0 to 2415
Data columns (total 7 columns):
 #   Column     Non-Null Count  Dtype
---  ------     --------------  -----
 0   Date       2416 non-null   object
 1   Open       2416 non-null   float64
 2   High       2416 non-null   float64
 3   Low        2416 non-null   float64
 4   Close      2416 non-null   float64
```

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```
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Data columns (total 7 columns):
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---  ------     --------------  -----  
 0   Date       2416 non-null   object 
 1   Open       2416 non-null   float64
 2   High       2416 non-null   float64
 3   Low        2416 non-null   float64
 4   Close      2416 non-null   float64
 5   Adj Close  2416 non-null   float64
 6   Volume     2416 non-null   int64  
dtypes: float64(5), int64(1), object(1)
memory usage: 132.3+ KB
```

In [36]:
```
df.corr()
```

```
C:\Users\fathi\AppData\Local\Temp\ipykernel_7668\1134722465.py:1: FutureWarning: The default value of numeric_only in D
ataFrame.corr is deprecated. In a future version, it will default to False. Select only valid columns or specify the va
lue of numeric_only to silence this warning.
  df.corr()
```

Out[36]:

	Open	High	Low	Close	Adj Close	Volume
Open	1.000000	0.999425	0.999575	0.998886	0.998886	0.501762
High	0.999425	1.000000	0.999389	0.999640	0.999640	0.512944
Low	0.999575	0.999389	1.000000	0.999447	0.999447	0.493496
Close	0.998886	0.999640	0.999447	1.000000	1.000000	0.505169

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Out[36]:

	Open	High	Low	Close	Adj Close	Volume
Open	1.000000	0.999425	0.999575	0.998886	0.998886	0.501762
High	0.999425	1.000000	0.999389	0.999640	0.999640	0.512944
Low	0.999575	0.999389	1.000000	0.999447	0.999447	0.493496
Close	0.998886	0.999640	0.999447	1.000000	1.000000	0.505169
Adj Close	0.998886	0.999640	0.999447	1.000000	1.000000	0.505169
Volume	0.501762	0.512944	0.493496	0.505169	0.505169	1.000000

In [8]:
```
df.isnull().sum()
```

Out[8]:
```
Date         0
Open         0
High         0
Low          0
Close        0
Adj Close    0
Volume       0
dtype: int64
```

In [14]:
```
plt.figure(figsize=(15,5))
plt.plot(df['Close'],c='green')
plt.title('Tesla Close Price',fontsize=15)
plt.ylabel('Price in dollars',fontsize=10)
plt.show()
```

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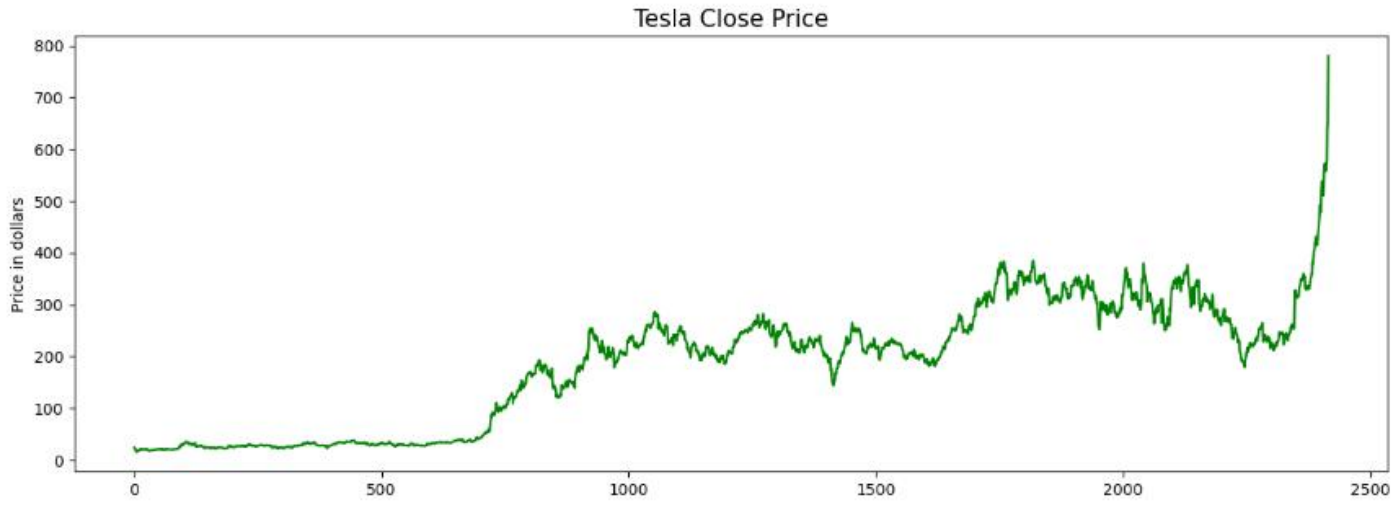
```
plt.ylabel('Price in dollars',fontsize=10)
plt.show()
```



In [25]:
```
x=df['Date'].index.values.reshape(-1,1)
```

In [20]:
```
y=df['Close'].values
```

In [26]:
```
X_train,X_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=100)
```

In [27]:

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In [26]:
```
X_train,X_test,y_train,y_test=train_test_split(x,y,test_size=0.2,random_state=100)
```

In [27]:
```
regressor=LinearRegression()
```

In [28]:
```
regressor.fit(X_train,y_train)
```

Out[28]:
```
LinearRegression()
```
In a Jupyter environment, please rerun this cell to show the HTML representation or trust the notebook.
On GitHub, the HTML representation is unable to render, please try loading this page with nbviewer.org.

In [29]:
```
y_pred=regressor.predict(X_test)
```

In [30]:
```
mse=mean_squared_error(y_test,y_pred)
```

In [31]:
```
r2=r2_score(y_test,y_pred)
```

In [33]:
```
print(f"Mean Squared Error:{mse}")
```
```
Mean Squared Error:2592.4382639689543
```

In [34]:
```
print(f"R-squared score:{r2}")
```
```
R-squared score:0.8146517164059925
```

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In [30]:
```
mse=mean_squared_error(y_test,y_pred)
```

In [31]:
```
r2=r2_score(y_test,y_pred)
```

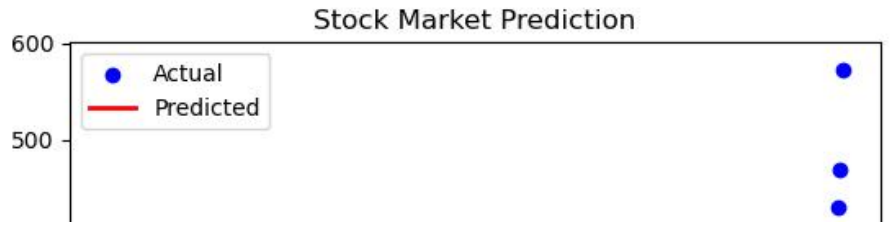
In [33]:
```
print(f"Mean Squared Error:{mse}")
```

```
Mean Squared Error:2592.4382639689543
```

In [34]:
```
print(f"R-squared score:{r2}")
```

```
R-squared score:0.8146517164059925
```

In [35]:
```
plt.scatter(X_test,y_test,color='blue',label='Actual')
plt.plot(X_test,y_pred,color='red',linewidth=2,label='Predicted')
plt.xlabel('Date Index')
plt.ylabel('Stock Price')
plt.title('Stock Market Prediction')
plt.legend()
plt.show()
```



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```
plt.show()
```