

Assignment No. : 7

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```
In [2]: import pandas as pd
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In [3]: import matplotlib.pyplot as plt
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In [4]: import numpy as np
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In [5]: df=pd.read_csv("RelianceA.csv")
```

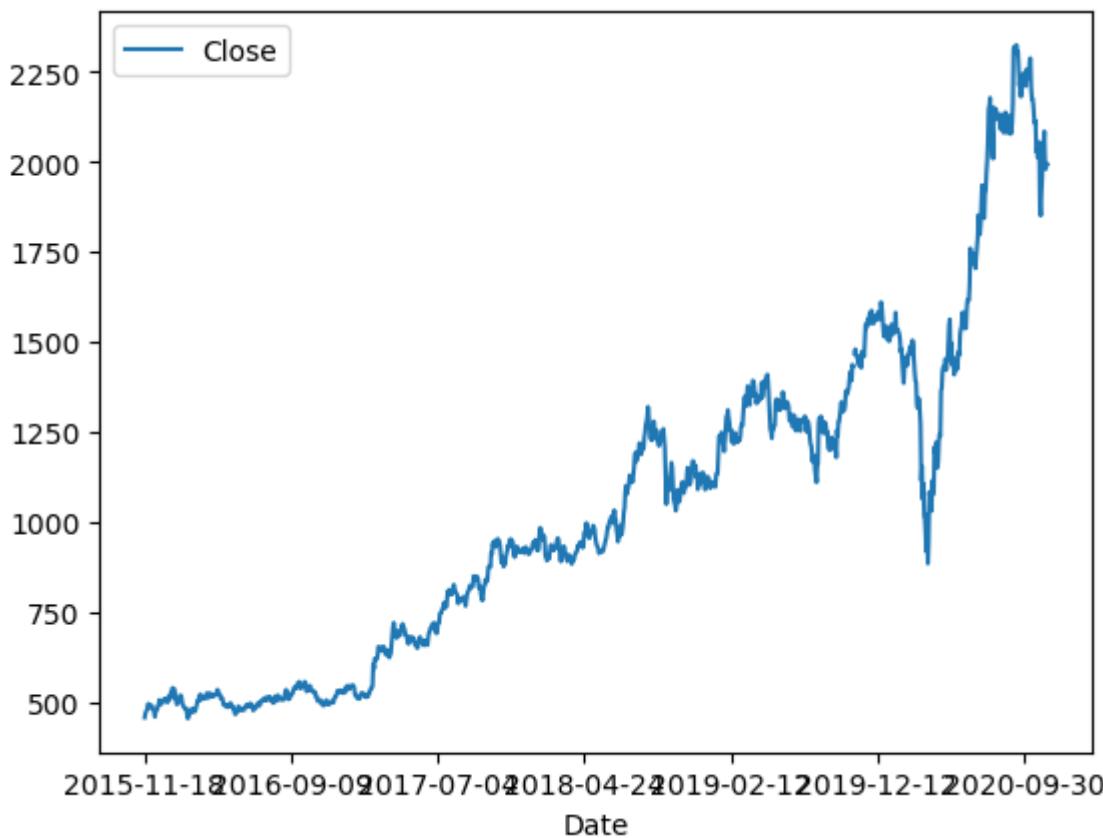
```
In [6]: df
```

	Date	Open	High	Low	Close	Adj Close	Volun
0	2015-11-18	463.799988	465.649994	454.975006	456.000000	436.671021	5142766
1	2015-11-19	459.450012	469.350006	458.625000	467.375000	447.563873	5569752
2	2015-11-20	467.000000	476.399994	462.774994	473.424988	453.357422	5167930
3	2015-11-23	475.000000	478.950012	473.100006	476.875000	456.661224	4800026
4	2015-11-24	476.500000	485.799988	475.524994	483.850006	463.340515	6768886
...
1228	2020-11-10	2077.000000	2090.000000	2041.199951	2084.550049	2084.550049	17045147
1229	2020-11-11	2089.000000	2095.000000	1978.099976	1997.199951	1997.199951	26178477
1230	2020-11-12	1981.000000	2008.449951	1965.000000	1980.000000	1980.000000	18481466
1231	2020-11-13	1982.000000	2036.650024	1981.750000	1996.400024	1996.400024	20946864
1232	2020-11-17	2085.000000	2085.000000	1985.000000	1993.250000	1993.250000	21479385

1233 rows × 7 columns

```
In [7]: df.plot(x='Date',y='Close')
```

```
Out[7]: <Axes: xlabel='Date'>
```



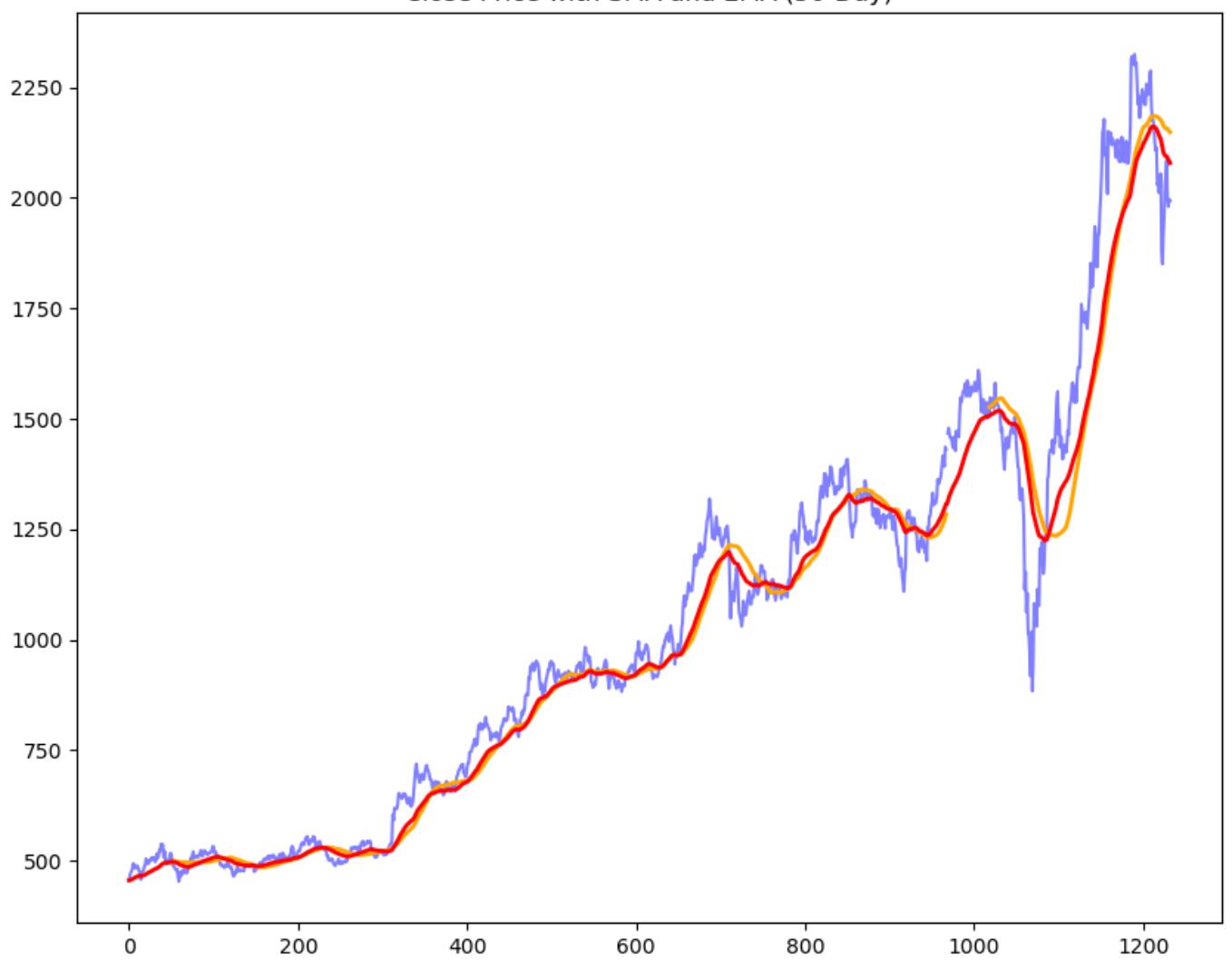
```
In [8]: df['SMA_50'] = df['Close'].rolling(window=50).mean()
df['CMA'] = df['Close'].expanding().mean()
df['EMA_50'] = df['Close'].ewm(span=50, adjust=False).mean()
print(df[['Close', 'SMA_50', 'CMA', 'EMA_50']])
```

	Close	SMA_50	CMA	EMA_50
0	456.000000	NaN	456.000000	456.000000
1	467.375000	NaN	461.687500	456.446078
2	473.424988	NaN	465.599996	457.111918
3	476.875000	NaN	468.418747	457.886941
4	483.850006	NaN	471.504999	458.905100
...
1228	2084.550049	2157.511006	1032.048711	2093.906384
1229	1997.199951	2155.710005	1032.834025	2090.113975
1230	1980.000000	2152.746006	1033.604078	2085.795780
1231	1996.400024	2150.432004	1034.386203	2082.290064
1232	1993.250000	2148.752004	1035.164502	2078.798297

[1233 rows x 4 columns]

```
In [9]: plt.figure(figsize=(10, 8))
plt.plot(df.index, df['Close'], label='Close Price', color='blue', alpha=0.5)
plt.plot(df.index, df['SMA_50'], label='SMA (50-Day)', color='orange', linewidth=2)
plt.plot(df.index, df['EMA_50'], label='EMA (50-Day)', color='red', linewidth=2)
plt.title('Close Price with SMA and EMA (50-Day)')
plt.show()
```

Close Price with SMA and EMA (50-Day)



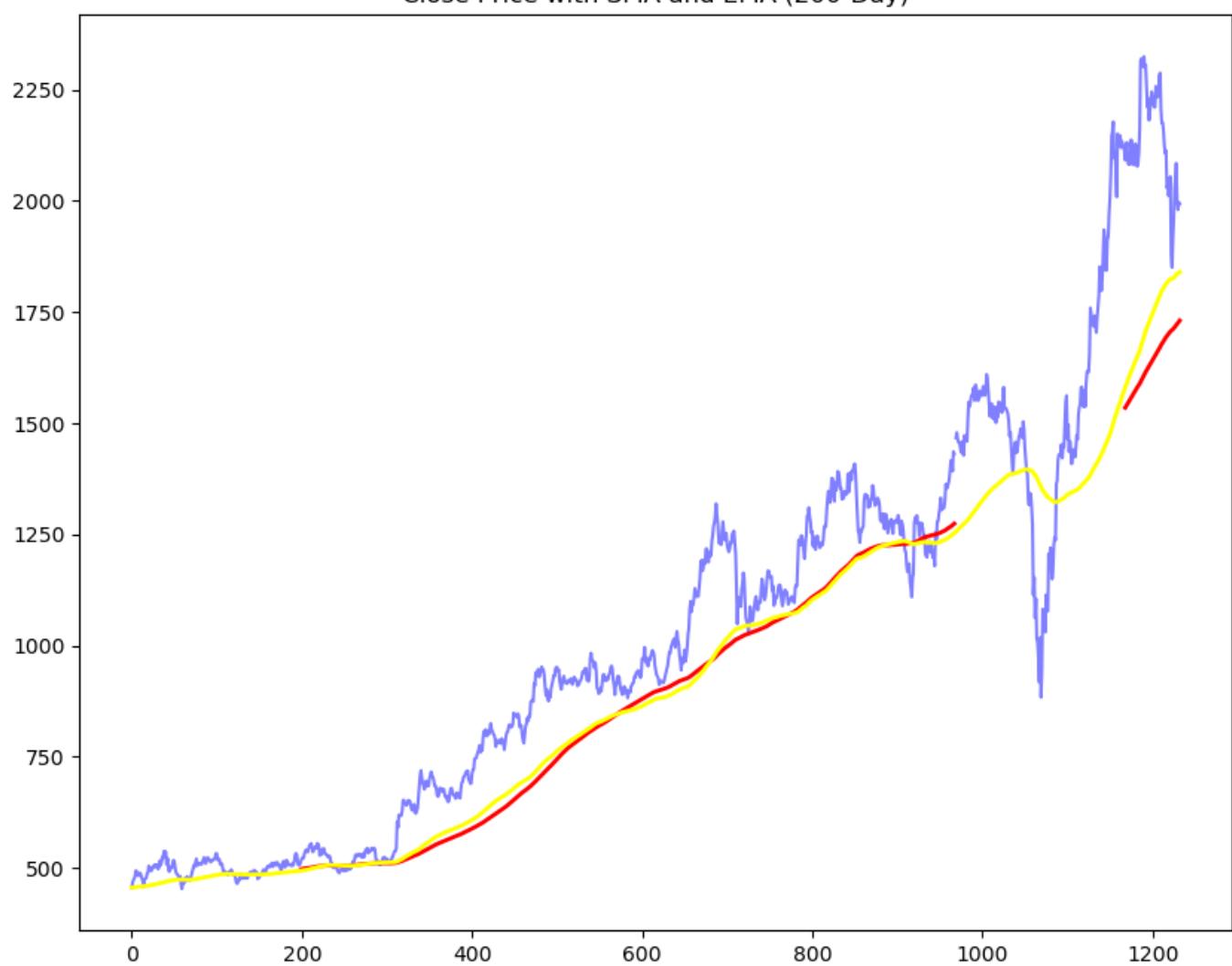
```
In [10]: df['SMA_200'] = df['Close'].rolling(window=200).mean()
df['CMA'] = df['Close'].expanding().mean()
df['EMA_200'] = df['Close'].ewm(span=200, adjust=False).mean()
print(df[['Close', 'SMA_200', 'CMA', 'EMA_200']])
```

	Close	SMA_200	CMA	EMA_200
0	456.000000	NaN	456.000000	456.000000
1	467.375000	NaN	461.687500	456.113184
2	473.424988	NaN	465.599996	456.285441
3	476.875000	NaN	468.418747	456.490312
4	483.850006	NaN	471.504999	456.762548
...
1228	2084.550049	1721.059958	1032.048711	1833.990980
1229	1997.199951	1723.411708	1032.834025	1835.614950
1230	1980.000000	1725.703957	1033.604078	1837.051617
1231	1996.400024	1728.153207	1034.386203	1838.637173
1232	1993.250000	1730.760707	1035.164502	1840.175609

[1233 rows x 4 columns]

```
In [11]: plt.figure(figsize=(10, 8))
plt.plot(df.index, df['Close'], label='Close Price', color='blue', alpha=0.5)
plt.plot(df.index, df['SMA_200'], label='SMA (200-Day)', color='Red', linewidth=2)
plt.plot(df.index, df['EMA_200'], label='EMA (200-Day)', color='yellow', linewidth=2)
plt.title('Close Price with SMA and EMA (200-Day)')
plt.show()
```

Close Price with SMA and EMA (200-Day)



```
In [12]: from prophet import Prophet
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```
In [13]: model=Prophet()
```

```
In [14]: df1=df.rename(columns={'Date': 'ds', 'Close': 'y'})
```

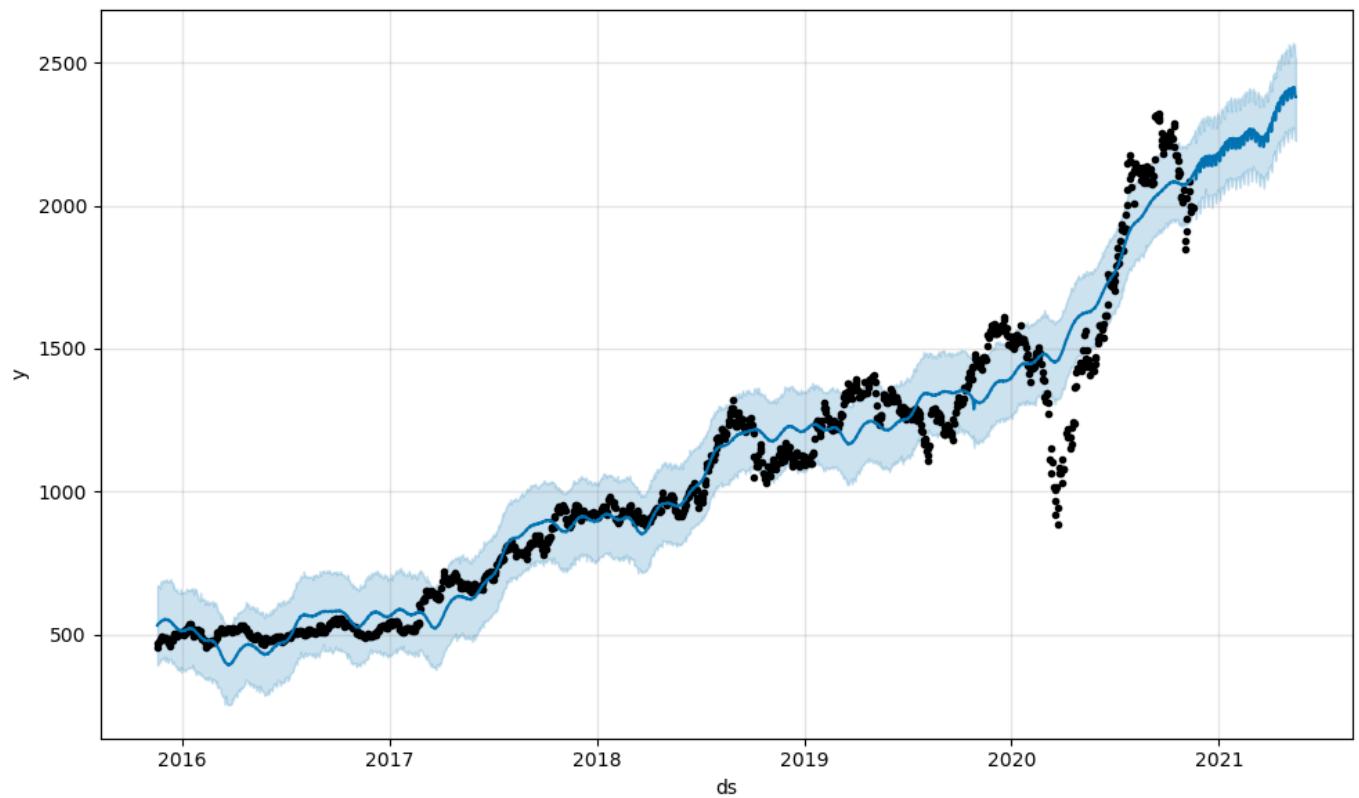
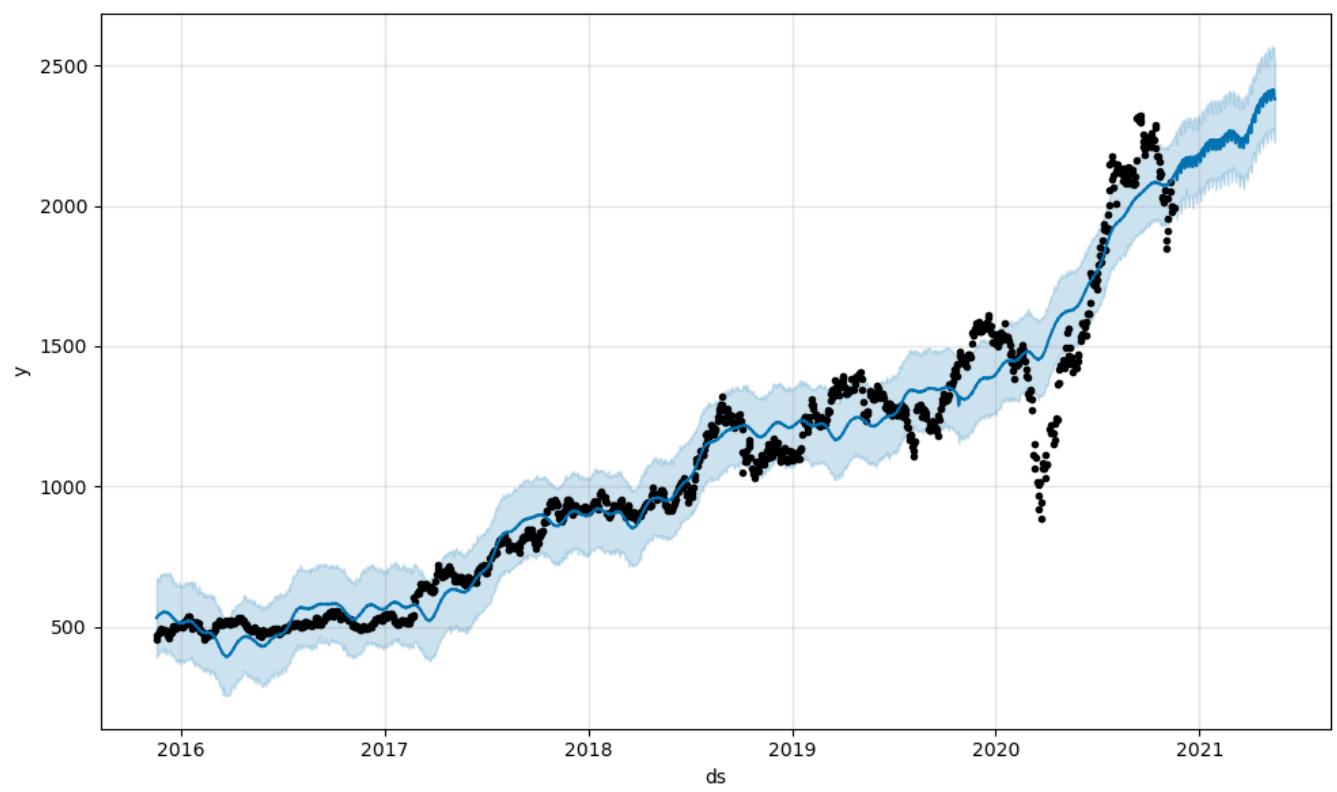
```
In [15]: model.fit(df1)
```

```
10:16:43 - cmdstanpy - INFO - Chain [1] start processing  
10:16:44 - cmdstanpy - INFO - Chain [1] done processing
```

```
Out[15]: <prophet.forecaster.Prophet at 0x7f2575092820>
```

```
In [31]: future = model.make_future_dataframe(periods=180)  
forecast = model.predict(future)  
model.plot(forecast)
```

Out[31]:



In []: