In [ ]:

```
NAME : SHINDE SHUBHAM DNYANDEV,     ROLL NO. : EN23107121,    BATCH : C
```

In [1]:

```
import pandas as pd
```

In [3]:

```
df = pd.read_csv("/home/admin1/Downloads/RELIANCE.NS_1973-05-08_2025-03-01.csv")
df
```

Out[3]:

	date	open	high	low	close	adj_close
0	1996-01-01 00:00:00+05:30	7.319124	7.358397	7.270925	7.345901	3.353593
1	1996-01-02 00:00:00+05:30	7.328050	7.363753	7.235222	7.288776	3.327513
2	1996-01-03 00:00:00+05:30	7.408381	7.745775	7.328050	7.344116	3.352778
3	1996-01-04 00:00:00+05:30	7.274495	7.297702	7.178097	7.276280	3.321809
4	1996-01-05 00:00:00+05:30	7.247718	7.247718	7.163816	7.226296	3.298990
...	...	...	...	...	...	...
7319	2025-02-21 00:00:00+05:30	1228.699951	1240.000000	1222.150024	1228.150024	1228.150024
7320	2025-02-24 00:00:00+05:30	1216.550049	1223.250000	1210.500000	1214.550049	1214.550049
7321	2025-02-25 00:00:00+05:30	1211.000000	1221.000000	1201.500000	1204.000000	1204.000000
7322	2025-02-27 00:00:00+05:30	1212.800049	1215.000000	1200.650024	1207.099976	1207.099976
7323	2025-02-28 00:00:00+05:30	1202.000000	1217.349976	1193.300049	1200.099976	1200.099976

7324 rows × 7 columns

In [5]:

```
df.describe()
```

Out[5]:

	open	high	low	close	adj_close	volume
count	7324.000000	7324.000000	7324.000000	7324.000000	7324.000000	7.324000e+03
mean	326.804309	330.415930	322.919029	326.516915	312.722616	5.938802e+07
std	402.088964	405.818972	398.104232	401.798753	402.816495	1.020567e+08
min	5.462565	5.487558	5.428648	5.487558	2.505212	0.000000e+00
25%	24.984990	25.477694	24.527992	24.952858	16.965307	1.366736e+07
50%	197.244431	199.758835	194.650009	197.067268	176.555252	2.429788e+07
75%	384.945511	389.145729	381.762489	384.688339	370.944550	6.205445e+07
max	1604.449951	1608.800049	1585.500000	1600.900024	1595.484985	1.448889e+09

In [7]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7324 entries, 0 to 7323
Data columns (total 7 columns):
 #   Column     Non-Null Count  Dtype  
---  ------     --------------  -----  
 0   date       7324 non-null   object 
 1   open       7324 non-null   float64
 2   high       7324 non-null   float64
 3   low        7324 non-null   float64
 4   close      7324 non-null   float64
 5   adj_close  7324 non-null   float64
 6   volume     7324 non-null   int64  
dtypes: float64(5), int64(1), object(1)
memory usage: 400.7+ KB
```

In [9]:
```
df.isnull()
```

Out[9]:

	date	open	high	low	close	adj_close	volume
0	False	False	False	False	False	False	False
1	False	False	False	False	False	False	False
2	False	False	False	False	False	False	False
3	False	False	False	False	False	False	False
4	False	False	False	False	False	False	False
...	...	...	...	...	...	...	...
7319	False	False	False	False	False	False	False
7320	False	False	False	False	False	False	False
7321	False	False	False	False	False	False	False
7322	False	False	False	False	False	False	False
7323	False	False	False	False	False	False	False

7324 rows × 7 columns

In [11]:
```
df.isnull().sum()
```

Out[11]:
```
date         0
open         0
high         0
low          0
close        0
adj_close    0
volume       0
dtype: int64
```

In [13]:
```
df.notnull()
```

```
Out[13]:
        date  open  high  low   close  adj_close  volume
   0    True  True  True  True  True        True    True
   1    True  True  True  True  True        True    True
   2    True  True  True  True  True        True    True
   3    True  True  True  True  True        True    True
   4    True  True  True  True  True        True    True
 ...     ...   ...   ...   ...   ...         ...     ...
7319    True  True  True  True  True        True    True
7320    True  True  True  True  True        True    True
7321    True  True  True  True  True        True    True
7322    True  True  True  True  True        True    True
7323    True  True  True  True  True        True    True

7324 rows × 7 columns
```

```
In [15]: df["date"] = pd.to_datetime(df["date"])
         df
```

```
Out[15]:
                          date         open         high          low        close    adj_close
   0                1996-01-01
             00:00:00+05:30     7.319124     7.358397     7.270925     7.345901     3.353593
   1                1996-01-02
             00:00:00+05:30     7.328050     7.363753     7.235222     7.288776     3.327513
   2                1996-01-03
             00:00:00+05:30     7.408381     7.745775     7.328050     7.344116     3.352778
   3                1996-01-04
             00:00:00+05:30     7.274495     7.297702     7.178097     7.276280     3.321809
   4                1996-01-05
             00:00:00+05:30     7.247718     7.247718     7.163816     7.226296     3.298990
 ...                       ...          ...          ...          ...          ...          ...
7319                2025-02-21
             00:00:00+05:30  1228.699951  1240.000000  1222.150024  1228.150024  1228.150024
7320                2025-02-24
             00:00:00+05:30  1216.550049  1223.250000  1210.500000  1214.550049  1214.550049
7321                2025-02-25
             00:00:00+05:30  1211.000000  1221.000000  1201.500000  1204.000000  1204.000000
7322                2025-02-27
             00:00:00+05:30  1212.800049  1215.000000  1200.650024  1207.099976  1207.099976
7323                2025-02-28
             00:00:00+05:30  1202.000000  1217.349976  1193.300049  1200.099976  1200.099976

7324 rows × 7 columns
```

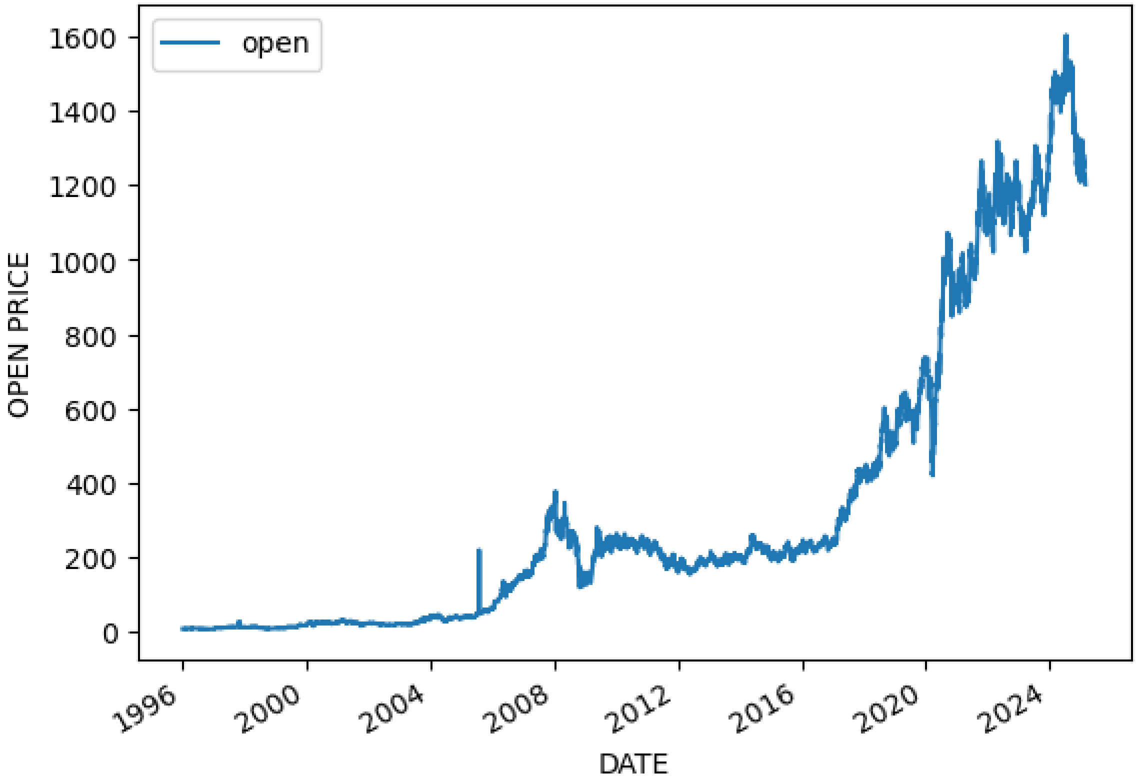
```
In [17]: df.dtypes
```

```
Out[17]: date         datetime64[ns, UTC+05:30]
         open                           float64
         high                           float64
         low                            float64
         close                          float64
         adj_close                      float64
         volume                           int64
         dtype: object
```

```
In [19]: import matplotlib.pyplot as plt
```

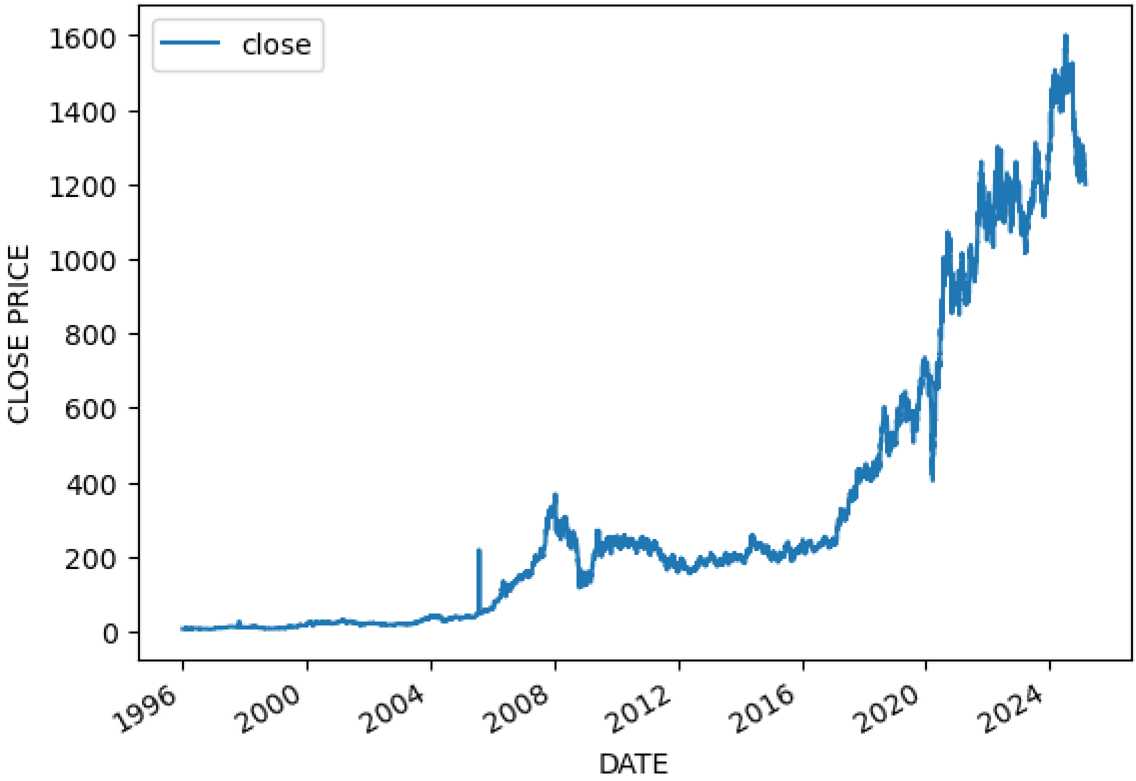
```
In [21]: df.plot(x = "date" , y = "open" , xlabel = "DATE" , ylabel = "OPEN PRICE")
```

```
Out[21]: <Axes: xlabel='DATE', ylabel='OPEN PRICE'>
```



```
In [23]: df.plot(x = "date" , y = "close" , xlabel = "DATE" , ylabel = "CLOSE PRICE")
```

```
Out[23]: <Axes: xlabel='DATE', ylabel='CLOSE PRICE'>
```



```
In [25]: df["SMA_50"] = df["close"].rolling(window = 50).mean()
         df["SMA_50"]
```

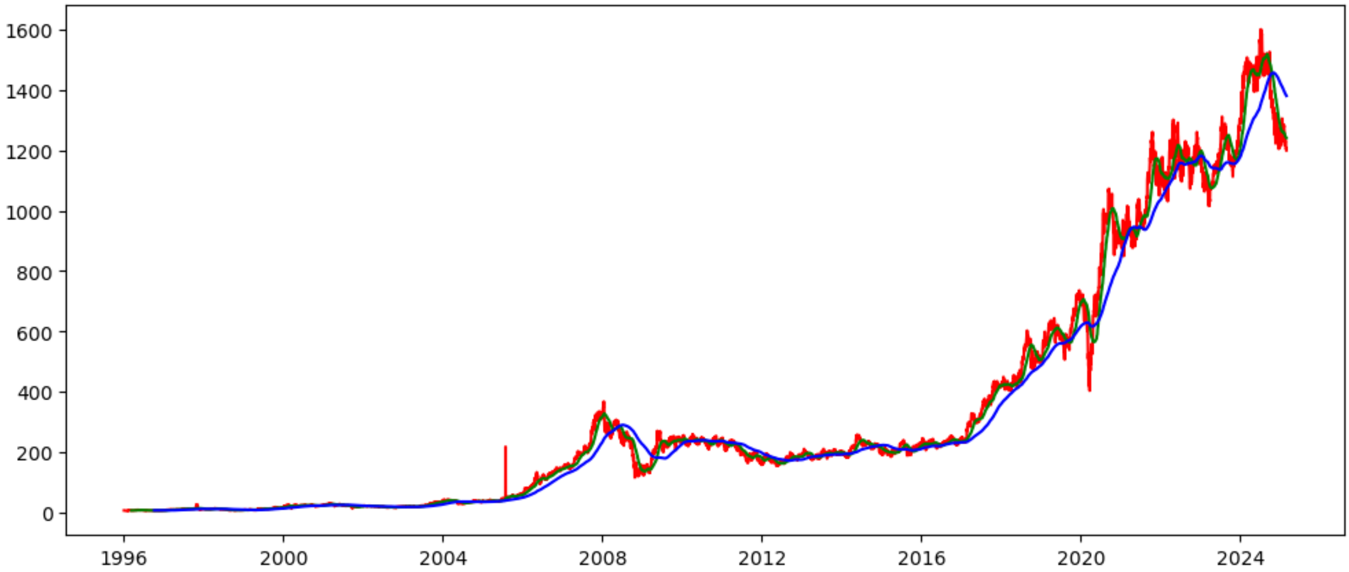
```
Out[25]: 0               NaN
         1               NaN
         2               NaN
         3               NaN
         4               NaN
                    ...
         7319    1244.585000
         7320    1243.510000
         7321    1242.683999
         7322    1241.760999
         7323    1241.153999
         Name: SMA_50, Length: 7324, dtype: float64
```

```
In [27]: df["SMA_200"] = df["close"].rolling(window = 200).mean()
         df["SMA_200"]
```

```
Out[27]: 0               NaN
         1               NaN
         2               NaN
         3               NaN
         4               NaN
                    ...
         7319    1384.737502
         7320    1383.839627
         7321    1382.822502
         7322    1381.844502
         7323    1380.744627
         Name: SMA_200, Length: 7324, dtype: float64
```

```
In [29]: plt.figure(figsize = (12, 5))
         plt.plot(df["date"], df["close"], color="Red")
         plt.plot(df["date"], df["SMA_50"], color="Green")
         plt.plot(df["date"], df["SMA_200"], color="Blue")
```

```
Out[29]: [<matplotlib.lines.Line2D at 0x7fe7779a1fd0>]
```



In [31]:
```
df1 = df[["date" , "close"]].rename(columns = {'date':'ds' , 'close':'y'})
df1
```

Out[31]:

	ds	y
0	1996-01-01 00:00:00+05:30	7.345901
1	1996-01-02 00:00:00+05:30	7.288776
2	1996-01-03 00:00:00+05:30	7.344116
3	1996-01-04 00:00:00+05:30	7.276280
4	1996-01-05 00:00:00+05:30	7.226296
...	...	...
7319	2025-02-21 00:00:00+05:30	1228.150024
7320	2025-02-24 00:00:00+05:30	1214.550049
7321	2025-02-25 00:00:00+05:30	1204.000000
7322	2025-02-27 00:00:00+05:30	1207.099976
7323	2025-02-28 00:00:00+05:30	1200.099976

7324 rows × 2 columns

In [33]:
```
df1['ds'] = pd.to_datetime(df['date']).dt.date
df1
```

Out[33]:

	ds	y
0	1996-01-01	7.345901
1	1996-01-02	7.288776
2	1996-01-03	7.344116
3	1996-01-04	7.276280
4	1996-01-05	7.226296
...	...	...
7319	2025-02-21	1228.150024
7320	2025-02-24	1214.550049
7321	2025-02-25	1204.000000
7322	2025-02-27	1207.099976
7323	2025-02-28	1200.099976

7324 rows × 2 columns

In [35]:

```
from prophet import Prophet
Model = Prophet()
```

In [37]:

```
Model.fit(df1)
```

```
16:26:05 - cmdstanpy - INFO - Chain [1] start processing
16:26:06 - cmdstanpy - INFO - Chain [1] done processing
```

Out[37]:

```
<prophet.forecaster.Prophet at 0x7fe775420550>
```

In [39]:

```
future = Model.make_future_dataframe(periods=180)
forcast = Model.predict(future)
forcast
```

Out[39]:

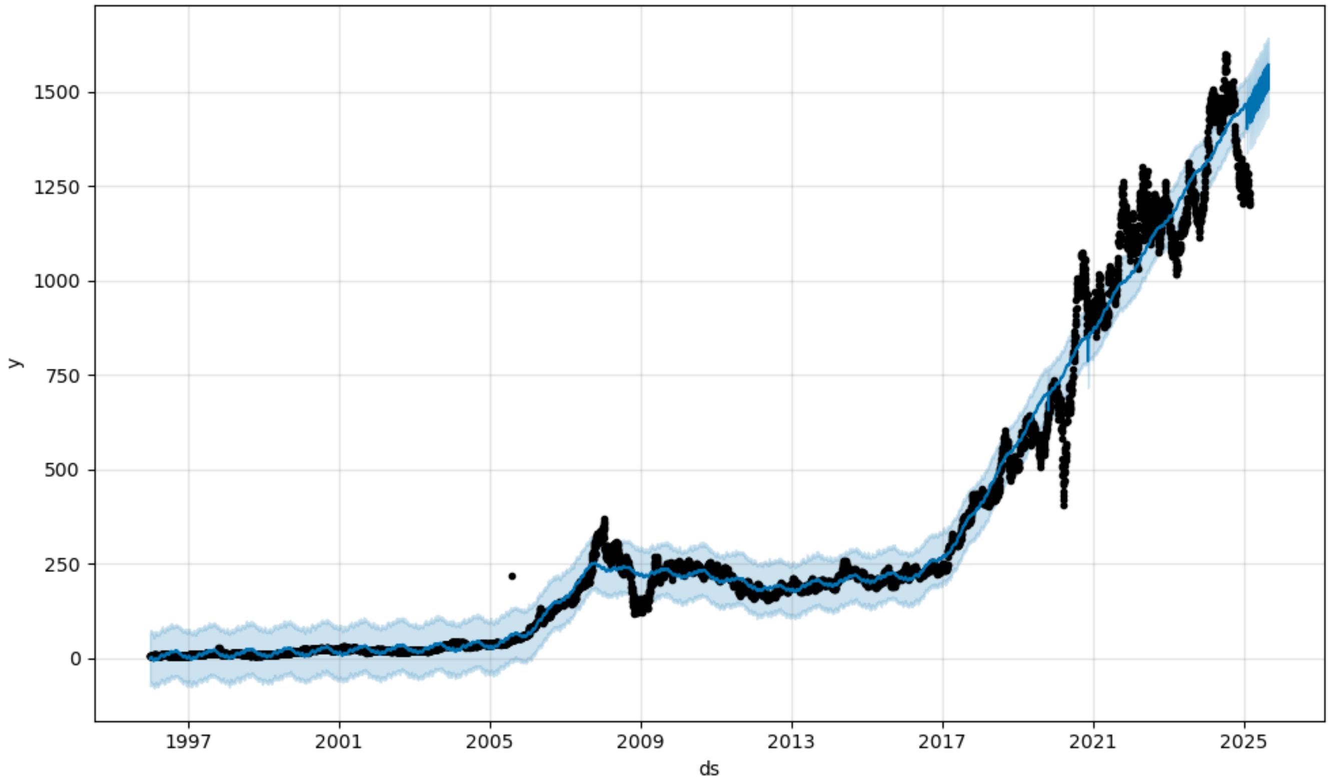
	ds	trend	yhat_lower	yhat_upper	trend_lower	trend_upper	additive
0	1996-01-01	-9.222913	-63.135646	63.644429	-9.222913	-9.222913	8.
1	1996-01-02	-9.215781	-73.870646	68.461743	-9.215781	-9.215781	8.
2	1996-01-03	-9.208649	-67.879287	71.445643	-9.208649	-9.208649	9.
3	1996-01-04	-9.201517	-71.106487	68.106894	-9.201517	-9.201517	9.
4	1996-01-05	-9.194385	-65.763320	68.568005	-9.194385	-9.194385	9.
...	...	...	...	...	...	...	
7499	2025-08-23	1543.724659	1436.069052	1574.668077	1541.536268	1545.981202	-39.
7500	2025-08-24	1544.128944	1455.094315	1588.721594	1541.923372	1546.417927	-20.
7501	2025-08-25	1544.533229	1499.925006	1637.197159	1542.312087	1546.851504	24.
7502	2025-08-26	1544.937514	1500.342298	1639.803229	1542.700607	1547.297869	25.
7503	2025-08-27	1545.341799	1503.692555	1637.412361	1543.087223	1547.744233	25.

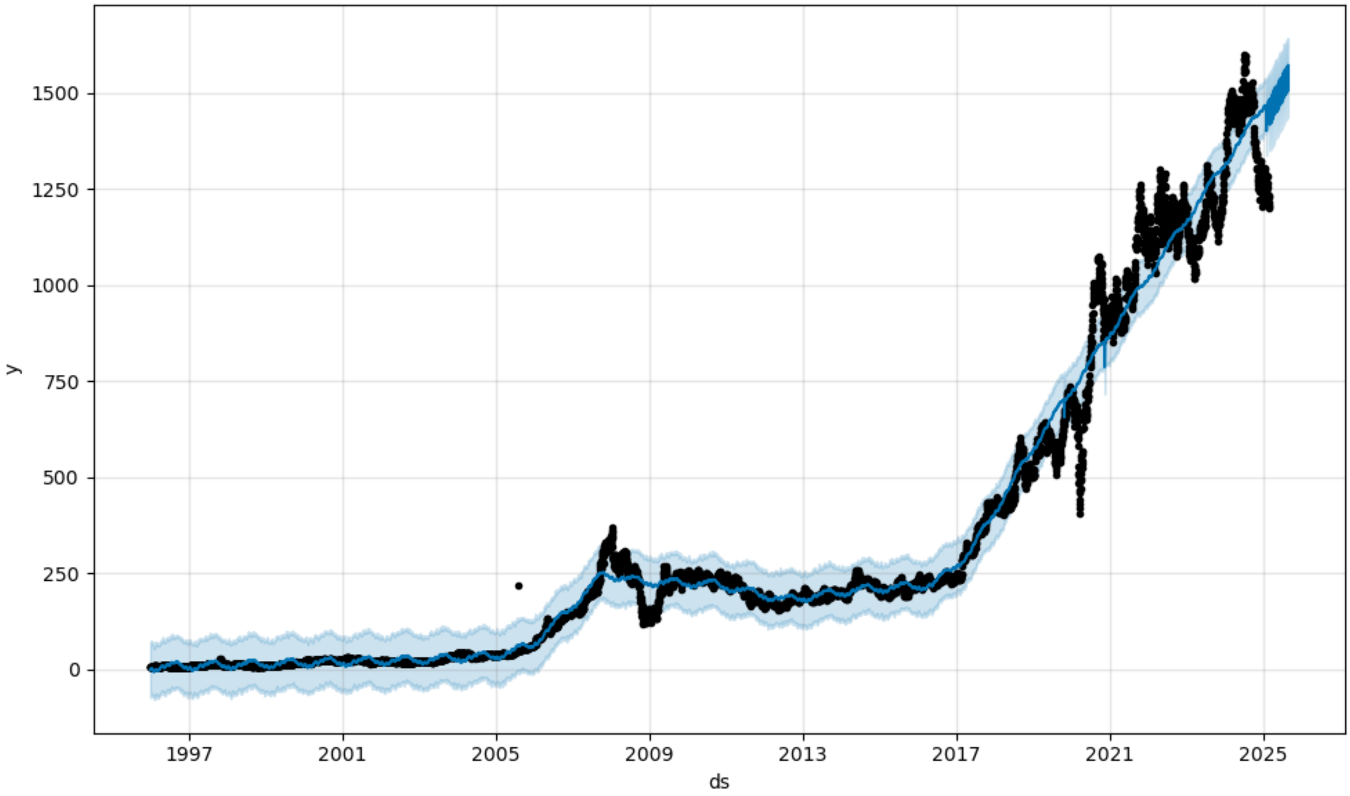
7504 rows × 19 columns

In [41]:

```
Model.plot(forcast)
```

Out[41]:





In [43]:

```
forcast[['ds','yhat']]
```

Out[43]:

	ds	yhat
0	1996-01-01	-1.151029
1	1996-01-02	-0.241635
2	1996-01-03	0.049457
3	1996-01-04	0.472626
4	1996-01-05	-0.154863
...	...	...
7499	2025-08-23	1504.717261
7500	2025-08-24	1523.610332
7501	2025-08-25	1569.510124
7502	2025-08-26	1570.533987
7503	2025-08-27	1570.916994

7504 rows × 2 columns

In [ ]: