8.Create a ARIMA model for time series forecasting

AIM:

To implement programs to a ARIMA model for time series forecasting.

PROCEDURE:

1.Import the necessary libraries:

```
import pandas as pd

import matplotlib.pyplot as plt

from statsmodels.tsa.arima.model import ARIMA

from statsmodels.graphics.tsaplots import plot_acf, plot_pacf
```

2.Load dataset:

```
df = pd.read_csv('PRICE_AND_DEMAND_201801_NSW1.csv')

df['SETTLEMENTDATE'] = pd.to_datetime(df['SETTLEMENTDATE'], format='%Y/%m/%d
%H:%M:%S')

df.set_index('SETTLEMENTDATE', inplace=True)
```

3.R Plot the original series

```
df['TOTALDEMAND'].plot(figsize=(12, 5), title='Total Demand Over Time')

plt.show()
```

4. Differencing the data

```
demand_diff = df['TOTALDEMAND'].diff().dropna()
```

5. Plot ACF and PACF

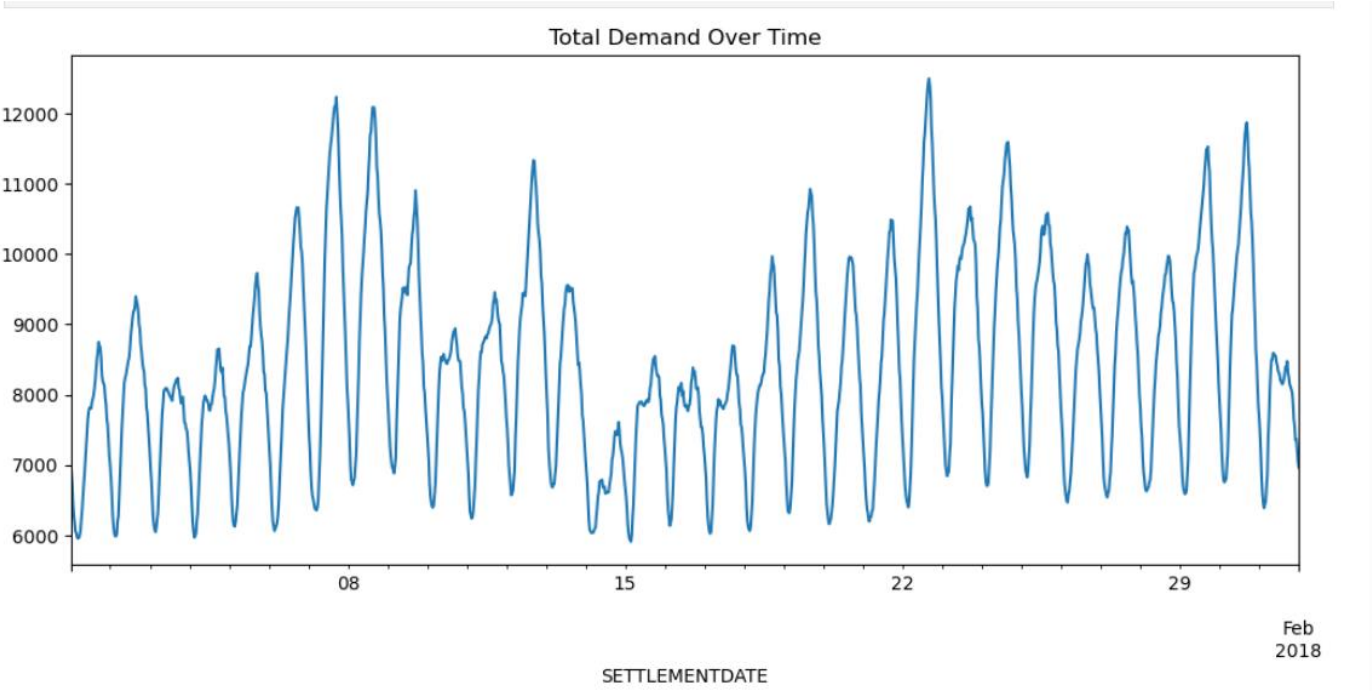
```
plot_acf(demand_diff, lags=40)

plt.show()
```

```
model = ARIMA(df['TOTALDEMAND'], order=(1,1,1))
model_fit = model.fit()
```

6. Print model summary

```
print(model_fit.summary())
```

OUTPUT:



RESULT:

Thus the program has been executed and implemented successfully.

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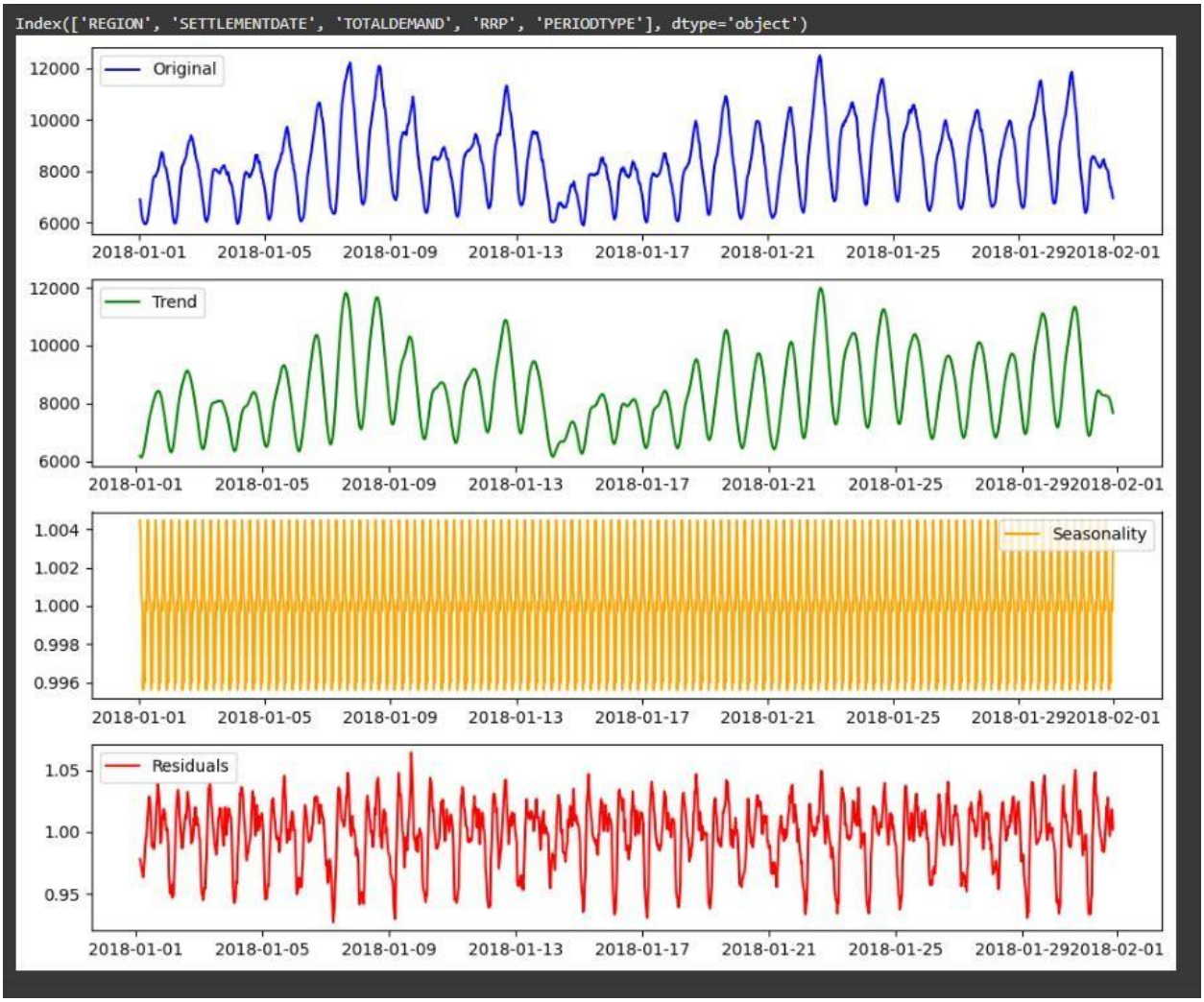

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