EXPERIMENT-6 Implement program to apply moving average smoothing for data preparation and time series forecasting.

AIM:

To implement programs to check moving average smoothing for data preparation and time series forecasting.

PROCEDURE:

1. Import the necessary libraries.

```
import pandas as pd

import matplotlib.pyplot as plt
```

2. Load the time series dataset.

```
df = pd.read_csv("C:/Users/admin/Downloads/PRICE_AND_DEMAND_201801_NSW1.csv",

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

3. Apply Moving Average Smoothing (SMA)

```
df["TOTALDEMAND"] = pd.to_numeric(df["TOTALDEMAND"], errors="coerce")

df.dropna(inplace=True)

df["SMA_7"] = df["TOTALDEMAND"].rolling(window=7).mean()

df["SMA_30"] = df["TOTALDEMAND"].rolling(window=30).mean()
```

4. Plot original data and moving averages

```
plt.figure(figsize=(12, 6))
plt.plot(df["TOTALDEMAND"], label="Original Data", alpha=0.5)
plt.plot(df["SMA_7"], label="7-day SMA", color="red")
plt.plot(df["SMA_30"], label="30-day SMA", color="green")
plt.legend()
plt.title("Time Series Smoothing using Moving Average")
plt.xlabel("Date")
plt.ylabel("Total Demand")
plt.show()
```

RESULT:

Thus the program to check moving average smoothing for data preparation and time series forecasting is executed successfully.