1. Implement programs for time series data cleaning, loading and handling times series data and pre-processing techniques

Aim:

The goal of this experiment is to understand how to load a dataset, clean it, and perform basic preprocessing steps to prepare it for analysis

Procedure:

1. Importing Required Libraries

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
```

Explanation:
We import numpy (np) is used for numerical operations, pandas (pd) for data manipulation, matplotlib.pyplot (plt) for plotting.

2. Loading the Dataset

```
file_path = "/content/GOOGL.csv"
df = pd.read_csv(file_path)
df["Date"] = pd.to_datetime(df["Date"])
df.set_index("Date", inplace=True)
```

Explanation:
We use `pd.read_csv()` to load a CSV file containing Gold data.

3. Understanding the Data

```
df.info()
```

Explanation:
df.info() provides a summary of the DataFrame, including the number of non-null values, column data types, and memory usage. It helps in understanding the dataset's structure and identifying missing values.

4. Displaying the First Few Rows

```
df.head()
```

Explanation:
`df.head()` shows the first five rows of the dataset, giving us an overview of the available columns and their values.

5. Visualizing Outliers

df.plot()

7. Adding new column to the dataset

```
df["Date"] = pd.to_datetime(df["Date"])
df.set_index("Date", inplace=True)

plt.figure(figsize=(12, 5))
plt.plot(df["Close"], label="Close Price", color="blue")
plt.title("Google Stock Closing Prices Over Time")
plt.xlabel("Year")
plt.ylabel("Closing Price (USD)")
plt.legend()
plt.grid()
plt.show()
```

8. Visualizing the Distribution

df.plot()

Result:

Thus programs for time series data cleaning, loading and handling times series data and pre-processing techniques
has been Executed Successfully.