1. IMPLEMENT PROGRAMS FOR TIME SERIES DATA CLEANING, LOADING HANDLING TIMES SERIES DATA AND PRE-PROCESSING TECHNIQUES.

EX.N0 : 01	**Implement programs for time series data cleaning, loading and handling times series data and pre-processing techniques.**
DATE: 25/01/2025	

AIM: To implement programs for time series data cleaning, loading and handling times series data, preprocessing techniques.

OBJECTIVE:

- Load, clean, and analyze **gold price data** from 2012 to 2021.
- Handle **missing values and outliers** for better accuracy.
- Identify **trends** and fluctuations in gold prices over time.
- Visualize gold price changes using **time-series plots**.
- Provide insights for **investors, analysts, and policymakers**.

BACKGROUND:

- Gold prices fluctuate due to economic conditions, inflation, and global demand.
- Understanding historical trends helps in investment decisions and forecasting.
- Major factors affecting gold prices:
- Inflation & currency value changes.
- Global crises and market volatility.
- Central bank policies and interest rates.
- Analyzing past data helps in predicting future trends and making data-driven decisions.

SCOPE OF THE PROGRAM:

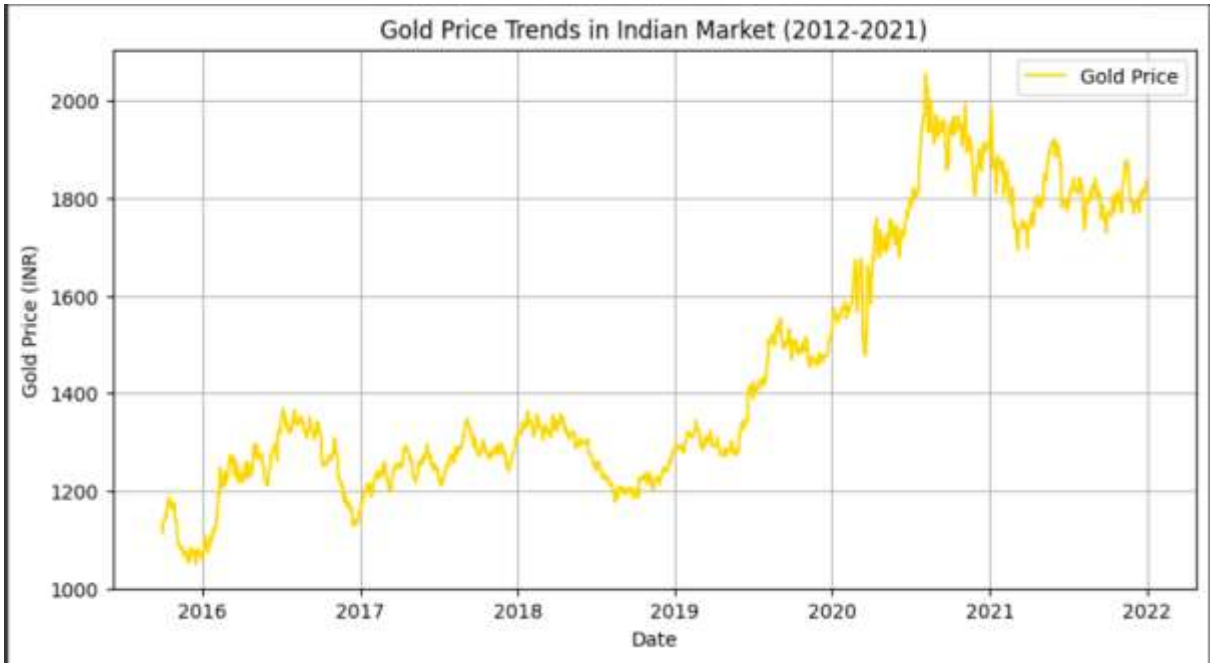
- Data Processing & Cleaning
- Exploratory Data Analysis (EDA)
- Data Visualization

PROGRAM:

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

df = pd.read_csv("/content/gold_data.csv")

print("Column names in dataset:", df.columns)

date_col = "Date"  # Change if your date column has a different name
df[date_col] = pd.to_datetime(df[date_col], errors='coerce')

gold_price_col = "Price"  # Change based on actual column name from print(df.columns)

df = df[(df[date_col].dt.year >= 2012) & (df[date_col].dt.year <= 2021)]
```

```
Q1 = df[gold_price_col].quantile(0.25)
Q3 = df[gold_price_col].quantile(0.75)
IQR = Q3 - Q1
df = df[(df[gold_price_col] >= (Q1 - 1.5 * IQR)) & (df[gold_price_col] <= (Q3 + 1.5 * IQR))]

# Plot Gold Prices Over Time
plt.figure(figsize=(10, 5))
plt.plot(df[date_col], df[gold_price_col], color='gold', label="Gold Price")
plt.xlabel("Date")
plt.ylabel("Gold Price (INR)")
plt.title("Gold Price Trends in Indian Market (2012-2021)")
plt.legend()
plt.grid()
plt.show()
```

OUTPUT:



RESULT:

Thus, the program using the time series data implementation has been successfully executed, and the gold price trends have been analyzed and visualized.