EXERCISE NO. 1
IMPLEMENTATION OF TIME SERIES DATA LOADING, CLEANING AND PRE-PROCESSING AND VISUALISATION

AIM:
To implement a program for time series data loading, cleaning, pre-processing and visualisation.

ALGORITHM:
1. Import the necessary libraries.
2. Load the dataset and view the outline of the dataset.
3. Preprocess the dataset with English months using a dictionary.
4. Visualise the data.

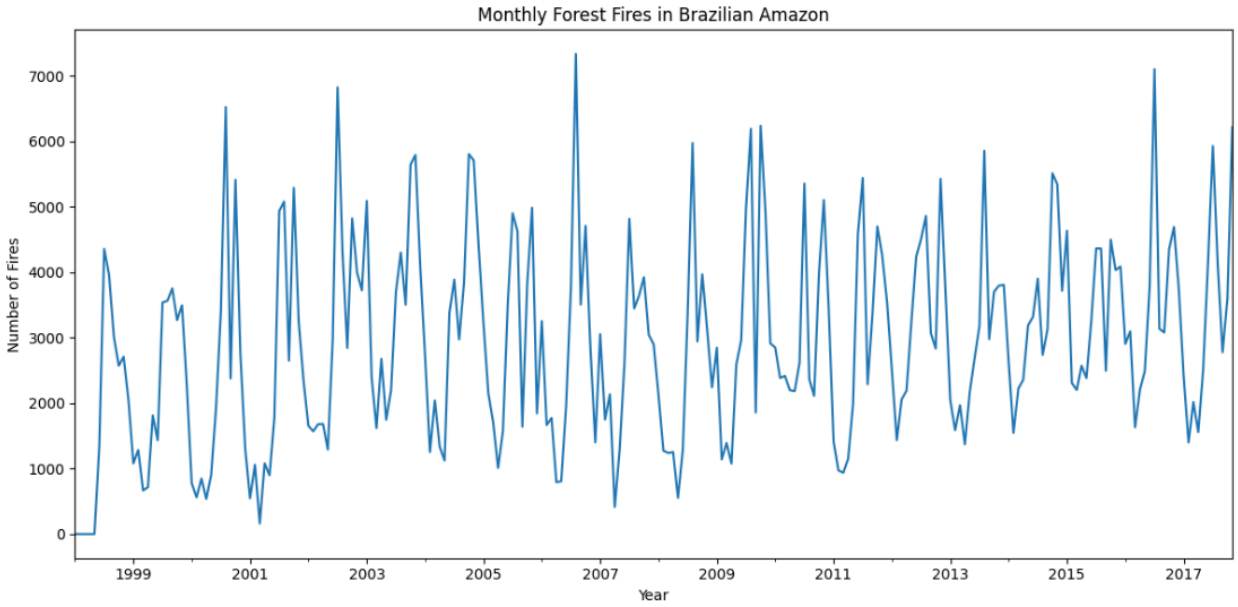
PROGRAM:
```
import pandas as pd
import matplotlib.pyplot as plt
df = pd.read_csv('C:/Users/menak/TSA/amazon.csv', encoding='latin1')
print(df.head())
month_map = {
  'Janeiro': 'January', 'Fevereiro': 'February', 'Março': 'March',
  'Abril': 'April', 'Maio': 'May', 'Junho': 'June',
  'Julho': 'July', 'Agosto': 'August', 'Setembro': 'September',
  'Outubro': 'October', 'Novembro': 'November', 'Dezembro': 'December'
}

df['month'] = df['month'].map(month_map)
df['date'] = pd.to_datetime(df['month'] + ' ' + df['year'].astype(str), format='%B %Y')
df.set_index('date', inplace=True)
print(df.head())
plt.figure(figsize=(12, 6))
df.resample('ME')['number'].sum().plot(title='Monthly Forest Fires in Brazilian Amazon',
                                       xlabel='Year',
                                       ylabel='Number of Fires')
plt.tight_layout()
plt.show()
```

OUTPUT:

	year	state	month	number	date
0	1998	Acre	Janeiro	0.0	1998-01-01
1	1999	Acre	Janeiro	0.0	1999-01-01
2	2000	Acre	Janeiro	0.0	2000-01-01
3	2001	Acre	Janeiro	0.0	2001-01-01
4	2002	Acre	Janeiro	0.0	2002-01-01

	year	state	month	number
date				
1998-01-01	1998	Acre	January	0.0
1999-01-01	1999	Acre	January	0.0
2000-01-01	2000	Acre	January	0.0
2001-01-01	2001	Acre	January	0.0
2002-01-01	2002	Acre	January	0.0



RESULT:

Thus the program has been successfully implemented and verified.