```
import numpy as np
import pandas as pd
```

```
from google.colab import files
uploaded = files.upload()
```

Choose Files datafile_02.csv

- **datafile_02.csv**(text/csv) - 988 bytes, last modified: 11/9/2022 - 100% done

```
Saving datafile_02.csv to datafile_02.csv
```

```
import io
df = pd.read_csv(io.BytesIO(uploaded['datafile_02.csv']))
print(df)
```

```
     0                                        9100
     1                                        7000
     2                                        7100
     3                                        8200
     4                                        3200
     5                                        9700
     6                                        8900
     7                                        5300
     8                                        6800
     9                                        8800
     10                                       7900
     11                                      10000
     12                                       9500

         Total Capacity  in Eleventh Plan (MT) (2011-12) Proj.  \
     0                                                    3145
     1                                                    6340
     2                                                   10640
     3                                                   10810
     4                                                    6420
     5                                                    7230
     6                                                    6398
     7                                                    5475
     8                                                    6050
     9                                                    6690
     10                                                   9191
     11                                                   9560
     12                                                  12220

         Total Capacity  in Eleventh Plan (MT) (2011-12) Ach.  \
     0                                                    1635
     1                                                    5070
     2                                                    7650
     3                                                    7293
     4                                                    3100
     5                                                    7972
     6                                                    3334
     7                                                    4098
     8                                                    5097
     9                                                    4190
```

```
10                                                  4453
11                                                  6400
12                                                  8691

    Total Capacity  in Eleventh Plan (MT) (2011-12) %
0                                                   5100
1                                                   7900
2                                                   7100
3                                                   6700
4                                                   4800
5                                                  11000
6                                                   5200
7                                                   7400
8                                                   8400
9                                                   6200
10                                                  4800
11                                                  6600
12                                                  7100
```

```
print(df.columns)
df.head()
```

```
Index(['Port', 'Traffic in Eleventh Plan (MT) (2011-12)Proj.',
       'Traffic in Eleventh Plan (MT) (2011-12) Ach.',
       'Traffic in Eleventh Plan (MT) (2011-12) %',
       'Total Capacity  in Eleventh Plan (MT) (2011-12) Proj.',
       'Total Capacity  in Eleventh Plan (MT) (2011-12) Ach.',
       'Total Capacity  in Eleventh Plan (MT) (2011-12) %'],
      dtype='object')
```

	Port	Traffic in Eleventh Plan (MT) (2011-12)Proj.	Traffic in Eleventh Plan (MT) (2011-12) Ach.	Traffic in Eleventh Plan (MT) (2011-12) %	Total Capacity in Eleventh Plan (MT) (2011-12) Proj.	Total Capacity in Eleventh Plan (MT) (2011-12) Ach.	Total Capacity in Eleventh Plan (MT) (2011-12) %
0	Kolkata	1343	1223	9100	3145	1635	5100
1	Haldia	4450	3101	7000	6340	5070	7900
2	Paradeep	7640	5425	7100	10640	7650	7100
3	Visakhapatnam	8220	6742	8200	10810	7293	6700
4	Ennore	4700	1496	3200	6420	3100	4800

```
# Preprocessing the dataset

# Renaming the columns
df.rename(columns = {'Traffic in Eleventh Plan (MT) (2011-12)Proj.':'Traffic_Projected','Traffic ir
df
```

	Port	Traffic_Projected	Traffic_Achieved	Traffic in Eleventh Plan (MT) (2011-12) %	Total_Capacity_P
0	Kolkata	1343	1223	9100	
1	Haldia	4450	3101	7000	
2	Paradeep	7640	5425	7100	
3	Visakhapatnam	8220	6742	8200	
4	Ennore	4700	1496	3200	
5	Chennai	5750	5571	9700	
6	Tuticorin	3172	2810	8900	
7	Cochin	3817	2010	5300	

```
# Perparing the Calculations:

Traffic_Percent = round((df.Traffic_Achieved/df.Traffic_Projected)*100,2)


Traffic_Percent

     0     91.06
     1     69.69
     2     71.01
     3     82.02
     4     31.83
     5     96.89
     6     88.59
     7     52.66
     8     67.49
     9     87.54
     10    79.07
     11    99.56
     12    95.13
     dtype: float64


Total_Percent = round( (df.Total_Capacity_Achieved/df.Total_Capacity_Projected)*100,2)
Total_Percent

     0      51.99
     1      79.97
     2      71.90
     3      67.47
     4      48.29
     5     110.26
     6      52.11
     7      74.85
     8      84.25
```

```
9      62.63
10     48.45
11     66.95
12     71.12
dtype: float64
```

```
# Replacing the existing columns with newly created columns
df.rename(columns = {'Traffic in Eleventh Plan (MT) (2011-12) %':'Traffic_Percent%','Total Capacity
df.iloc[:,3:4] = Traffic_Percent
df.iloc[:,6:] = Total_Percent
df
```

	Port	Traffic_Projected	Traffic_Achieved	Traffic_Percent%	Total_Ca
0	Kolkata	1343	1223	91.06	
1	Haldia	4450	3101	69.69	
2	Paradeep	7640	5425	71.01	
3	Visakhapatnam	8220	6742	82.02	
4	Ennore	4700	1496	31.83	
5	Chennai	5750	5571	96.89	
6	Tuticorin	3172	2810	88.59	
7	Cochin	3817	2010	52.66	
8	NMPT	4881	3294	67.49	
9	Mormugao	4455	3900	87.54	
10	Mumbai	7105	5618	79.07	
11	JNPT	6604	6575	99.56	
12	Kandla	8672	8250	95.13	

```
df.shape
```

```
(13, 7)
```

```
# Checking for null values
```

```
df.isnull().sum()
```

```
Port                      0
Traffic_Projected         0
Traffic_Achieved          0
Traffic_Percent%          0
Total_Capacity_Projected  0
Total_Capacity_Achieved   0
Total_Percent%            0
dtype: int64
```

```
# Summary of Dataset
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 13 entries, 0 to 12
Data columns (total 7 columns):
 #   Column                    Non-Null Count  Dtype
---  ------                    --------------  -----
 0   Port                      13 non-null     object
 1   Traffic_Projected         13 non-null     int64
 2   Traffic_Achieved          13 non-null     int64
 3   Traffic_Percent%          13 non-null     float64
 4   Total_Capacity_Projected  13 non-null     int64
 5   Total_Capacity_Achieved   13 non-null     int64
 6   Total_Percent%            13 non-null     float64
dtypes: float64(2), int64(4), object(1)
memory usage: 856.0+ bytes
```

```
df.describe()
```

	Traffic_Projected	Traffic_Achieved	Traffic_Percent%	Total_Capacity_Proj
count	13.000000	13.000000	13.000000	13.0
mean	5446.846154	4308.846154	77.887692	7705.3
std	2133.280019	2212.894855	19.382398	2570.2
min	1343.000000	1223.000000	31.830000	3145.0
25%	4450.000000	2810.000000	69.690000	6340.0
50%	4881.000000	3900.000000	82.020000	6690.0
75%	7105.000000	5618.000000	91.060000	9560.0
max	8672.000000	8250.000000	99.560000	12220.0

```
#Finding Outliers anr replacing the outliers

import seaborn as sns

sns.boxplot(x='Port',y='Traffic_Projected',data=df)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7f7d0587c490>
```


```
# Check For Categorical Columns and do encoding

from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
print(df.Port.value_counts())

df.Port = le.fit_transform(df.Port)
print(df.Port.value_counts())
```

```
Kolkata          1
Haldia           1
Paradeep         1
Visakhapatnam    1
Ennore           1
Chennai          1
Tuticorin        1
Cochin           1
NMPT             1
Mormugao         1
Mumbai           1
JNPT             1
Kandla           1
Name: Port, dtype: int64
6     1
3     1
10    1
12    1
2     1
0     1
11    1
1     1
9     1
7     1
8     1
4     1
5     1
Name: Port, dtype: int64
```

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