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```
6018     2.50
Name: Price, Length: 6019, dtype: float64
```

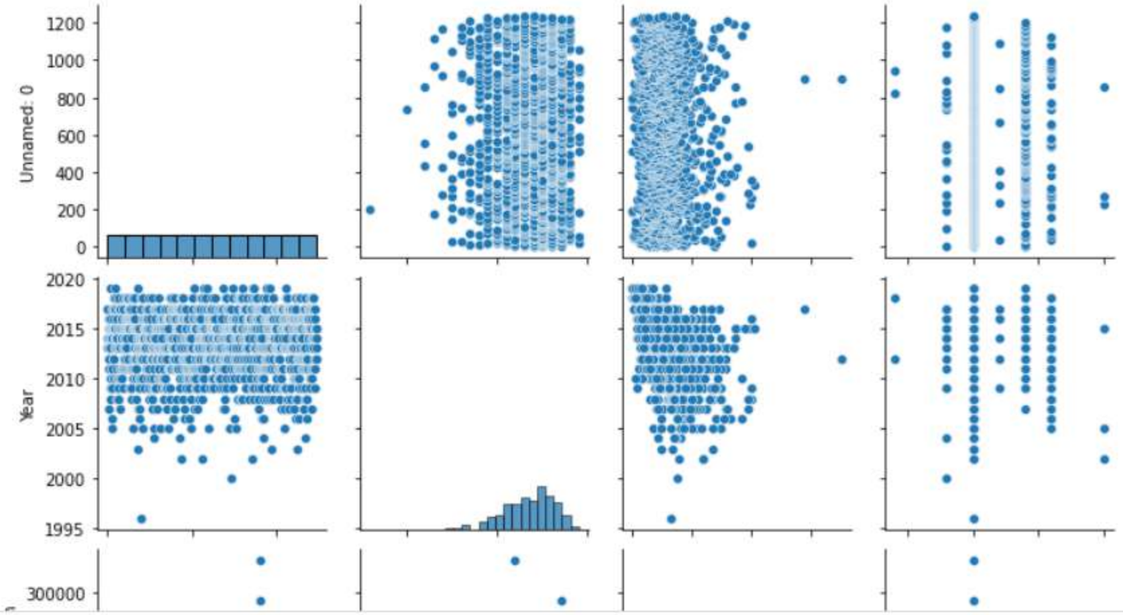
```
td=pd.read_csv("/content/test-data.csv")
td
```

```
td.head()
```

```
td.tail()
```

```
[52] sns.pairplot(td)
```

```
<seaborn.axisgrid.PairGrid at 0x7fc6d7921490>
```



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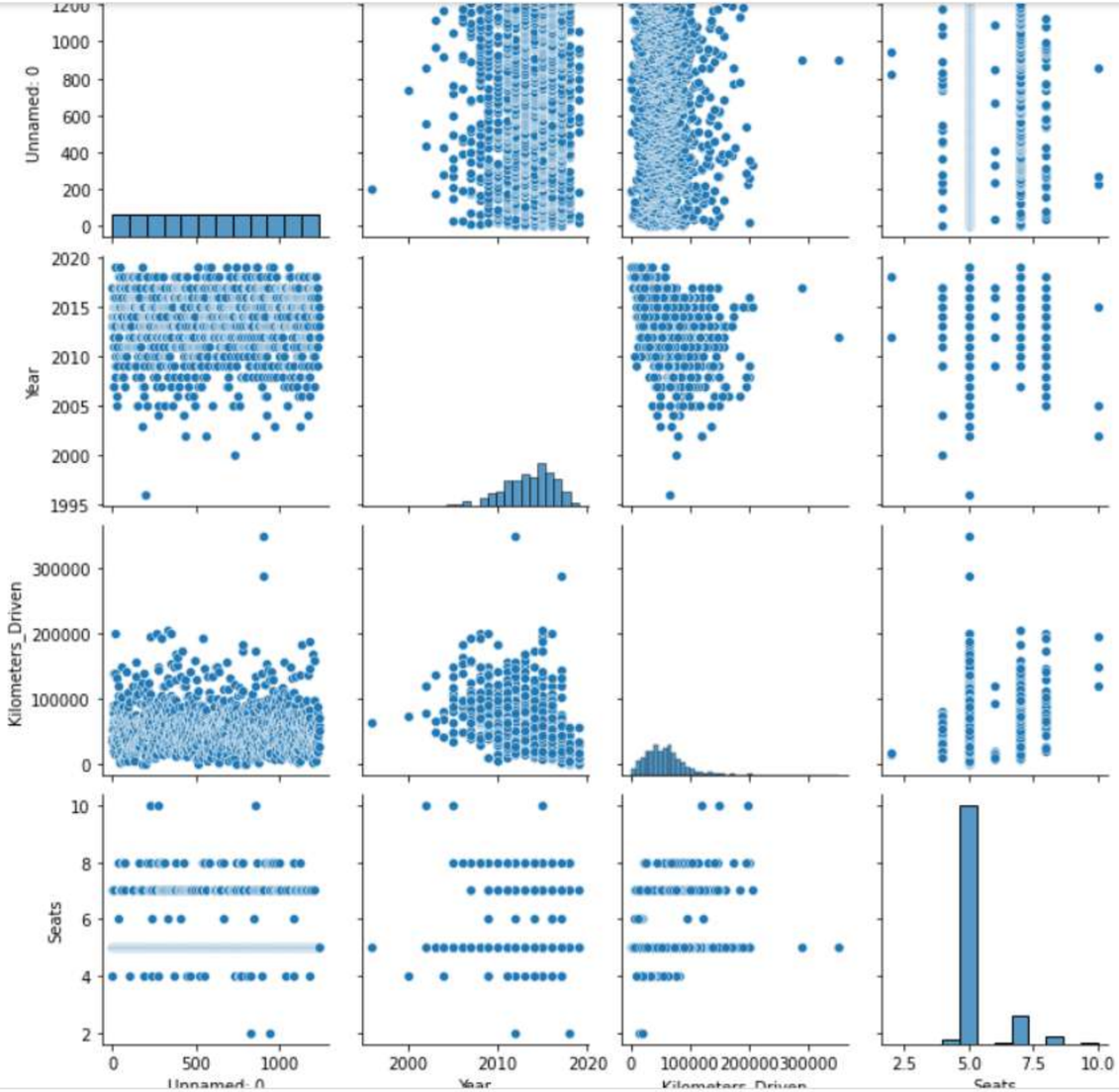

7s

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Files

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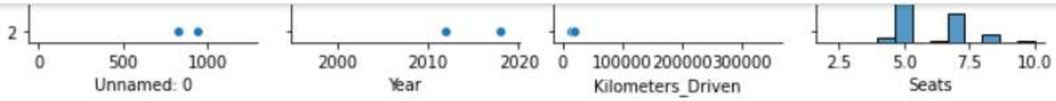
[52] 7s



0s

```
td.shape
```

```
(1234, 13)
```

[54] 0s

```
td.isna().sum()
```

```
Unnamed: 0             0
Name                   0
Location               0
Year                   0
Kilometers_Driven      0
Fuel_Type              0
Transmission           0
Owner_Type             0
Mileage                0
Engine                10
Power                 10
Seats                 11
New_Price           1052
dtype: int64
```

[55] 0s

```
td.columns
```

```
Index(['Unnamed: 0', 'Name', 'Location', 'Year', 'Kilometers_Driven',
       'Fuel_Type', 'Transmission', 'Owner_Type', 'Mileage', 'Engine', 'Power',
       'Seats', 'New_Price'],
      dtype='object')
```

[74] 0s

```
name1=td['Name'].value_counts()
name1
```

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Files

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```
Fuel_Type            0
[54] Transmission         0
Owner_Type           0
Mileage              0
Engine              10
Power               10
Seats               11
New_Price         1052
dtype: int64
```

```
[55] td.columns
```

```
Index(['Unnamed: 0', 'Name', 'Location', 'Year', 'Kilometers_Driven',
       'Fuel_Type', 'Transmission', 'Owner_Type', 'Mileage', 'Engine', 'Power',
       'Seats', 'New_Price'],
      dtype='object')
```

```
name1=td['Name'].value_counts()
name1
```

```
Maruti Alto LXi                                      9
Honda City 1.5 V MT                                  8
Maruti Swift Dzire VDI                               8
Volkswagen Polo 1.2 MPI Highline                     8
Hyundai i10 Magna                                    7
                                                    ..
Hyundai Santro GLS I - Euro II                       1
Honda City i DTec VX Option BL                       1
Land Rover Discovery 4 SDV6 SE                       1
Hyundai Verna CRDi 1.6 SX Option                     1
Mercedes-Benz E-Class 2009-2013 E 220 CDI Avantgarde 1
Name: Name, Length: 769, dtype: int64
```

```
[75] plt.pie(name1)
```

```
Text(1.0652461911180133, -0.2743183411814918, ''),
```

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Files

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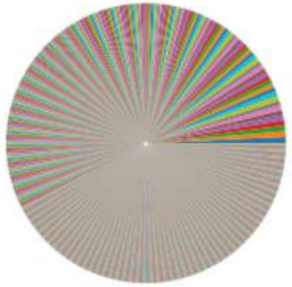
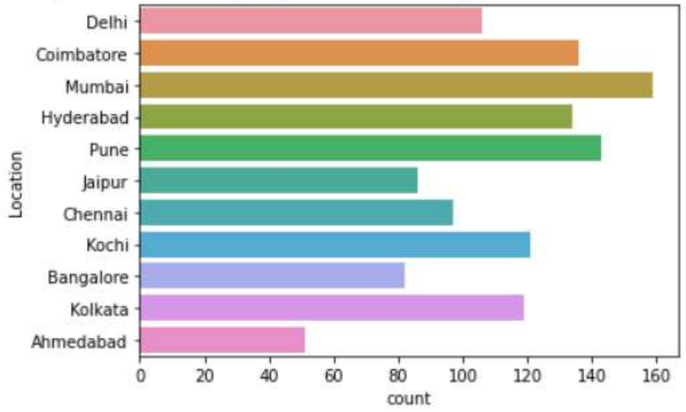
```
Text(1.0999679168014829, -0.008401309862526194, ''),
Text(1.0999964351000926, -0.0028004940792159356, '')])
```



[77]
```
loc1=td['Location'].value_counts()
sns.countplot(y='Location',data=td)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fc6cec08fa0>
```



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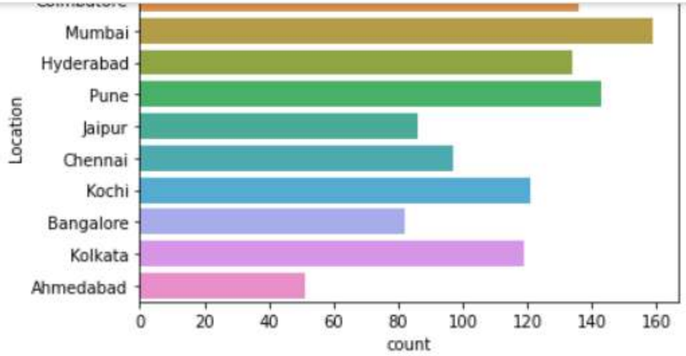
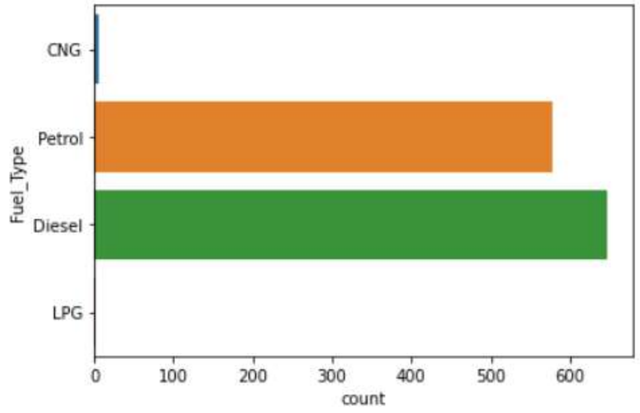
[77]
0s



[79]
0s

```
fuel1=td['Fuel_Type'].value_counts()
sns.countplot(y='Fuel_Type',data=td)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fc6ceaa1640>
```



[80]
0s

```
trans1=td['Transmission'].value_counts()
sns.countplot('Transmission',data=td)
```

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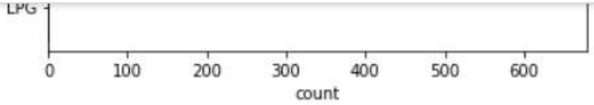
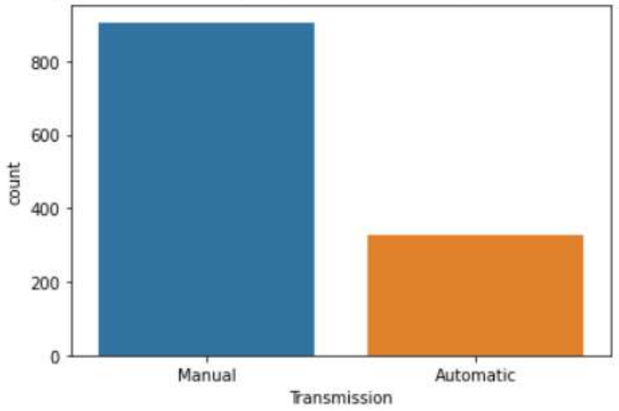
[79]



[80]
```
trans1=td['Transmission'].value_counts()
sns.countplot('Transmission',data=td)
```

```
/usr/local/lib/python3.8/dist-packages/seaborn/_decorators.py:36: FutureWarning: Pass the following variable as a keyword arg: x. From version 0
  warnings.warn(
<matplotlib.axes._subplots.AxesSubplot at 0x7fc6cea12520>
```




```
own1=td['Owner_Type'].value_counts
sns.countplot(x='Owner_Type',data=td)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fc6ce9c7e50>
```

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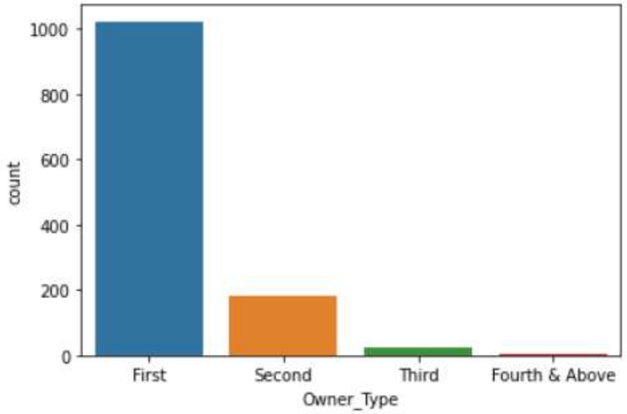
[80]


```
own1=td['Owner_Type'].value_counts
sns.countplot(x='Owner_Type',data=td)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fc6ce9c7e50>
```




```
[84] dummy1=pd.get_dummies(td[['Location','Fuel_Type','Transmission','Owner_Type']],drop_first=True)   #Get dummies encoding step
```

```
[85] dummy1
```

	Location_Bangalore	Location_Chennai	Location_Coimbatore	Location_Delhi	Location_Hyderabad	Location_Jaipur	Location_Kochi	Location_Kol
0	0	0	0	1	0	0	0	
1	0	0	1	0	0	0	0	

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```
dfff=pd.concat([td,dummy1],axis=1)
dfff
```

0s

```
[87] dfff.columns
```

```
Index(['Unnamed: 0', 'Name', 'Location', 'Year', 'Kilometers_Driven',
       'Fuel_Type', 'Transmission', 'Owner_Type', 'Mileage', 'Engine', 'Power',
       'Seats', 'New_Price', 'Location_Bangalore', 'Location_Chennai',
       'Location_Coimbatore', 'Location_Delhi', 'Location_Hyderabad',
       'Location_Jaipur', 'Location_Kochi', 'Location_Kolkata',
       'Location_Mumbai', 'Location_Pune', 'Fuel_Type_Diesel', 'Fuel_Type_LPG',
       'Fuel_Type_Petrol', 'Transmission_Manual', 'Owner_Type_Fourth & Above',
       'Owner_Type_Second', 'Owner_Type_Third'],
      dtype='object')
```

```
[88] dff2=dfff.drop(['Unnamed: 0','Name','Location','Fuel_Type','Transmission','Owner_Type','New_Price'],axis=1)
```

```
[89] #replace unwanted strings in columns like units
     dff2['Mileage']=dff2['Mileage'].str.replace('km/kg','')
     dff2['Mileage']=dff2['Mileage'].str.replace('kmpl','')
```

```
[90] dff2['Power']=dff2['Power'].str.replace('bhp','')
```

```
[91] dff2['Engine']=dff2['Engine'].str.replace('CC','')
```

```
[92] dff2['Mileage']=dff2['Mileage'].str.replace('null','0')
     dff2['Power']=dff2['Power'].str.replace('null','0')
     dff2['Engine']=dff2['Engine'].str.replace('null','0')
```

```
[93] dff2.isna().sum()
```

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Files

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- car economy price.c...
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```
[92] df2['Engine']=df2['Engine'].str.replace('null','0')
```

0s

```
dff2.isna().sum()
```

```
Year                        0
Kilometers_Driven           0
Mileage                     0
Engine                     10
Power                      10
Seats                      11
Location_Bangalore          0
Location_Chennai            0
Location_Coimbatore         0
Location_Delhi              0
Location_Hyderabad          0
Location_Jaipur             0
Location_Kochi              0
Location_Kolkata            0
Location_Mumbai             0
Location_Pune               0
Fuel_Type_Diesel            0
Fuel_Type_LPG               0
Fuel_Type_Petrol            0
Transmission_Manual         0
Owner_Type_Fourth & Above   0
Owner_Type_Second           0
Owner_Type_Third            0
dtype: int64
```

0s

```
[94] dff2.dtypes
```

```
Year                        int64
Kilometers_Driven           int64
Mileage                    object
Engine                     object
Power                      object
Seats                     float64
Location_Bangalore          uint8
```

Files

- ..
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- test-data.csv

```
[93] Owner_Type_Fourth & Above     0
     Owner_Type_Second             0
     Owner_Type_Third              0
     dtype: int64
```

```
dff2.dtypes
```

```
Year                          int64
Kilometers_Driven             int64
Mileage                      object
Engine                       object
Power                        object
Seats                       float64
Location_Bangalore            uint8
Location_Chennai              uint8
Location_Coimbatore           uint8
Location_Delhi                uint8
Location_Hyderabad            uint8
Location_Jaipur               uint8
Location_Kochi                uint8
Location_Kolkata              uint8
Location_Mumbai               uint8
Location_Pune                 uint8
Fuel_Type_Diesel              uint8
Fuel_Type_LPG                 uint8
Fuel_Type_Petrol              uint8
Transmission_Manual           uint8
Owner_Type_Fourth & Above     uint8
Owner_Type_Second             uint8
Owner_Type_Third              uint8
dtype: object
```

```
[95] dff2.columns
```

```
Index(['Year', 'Kilometers_Driven', 'Mileage', 'Engine', 'Power', 'Seats',
       'Location_Bangalore', 'Location_Chennai', 'Location_Coimbatore',
       'Location_Delhi', 'Location_Hyderabad', 'Location_Jaipur',
```

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```
Owner_Type_Third              uint8
dtype: object
```

[95]
```
dff2.columns
```

```
Index(['Year', 'Kilometers_Driven', 'Mileage', 'Engine', 'Power', 'Seats',
       'Location_Bangalore', 'Location_Chennai', 'Location_Coimbatore',
       'Location_Delhi', 'Location_Hyderabad', 'Location_Jaipur',
       'Location_Kochi', 'Location_Kolkata', 'Location_Mumbai',
       'Location_Pune', 'Fuel_Type_Diesel', 'Fuel_Type_LPG',
       'Fuel_Type_Petrol', 'Transmission_Manual', 'Owner_Type_Fourth & Above',
       'Owner_Type_Second', 'Owner_Type_Third'],
      dtype='object')
```

[96]
```
dff2['Mileage']=dff2['Mileage'].astype(float)
dff2['Power']=dff2['Power'].astype(float)
dff2['Engine']=dff2['Engine'].astype(float)
```

```
dff2.dtypes
```

```
Year                         int64
Kilometers_Driven            int64
Mileage                    float64
Engine                     float64
Power                      float64
Seats                      float64
Location_Bangalore           uint8
Location_Chennai             uint8
Location_Coimbatore          uint8
Location_Delhi               uint8
Location_Hyderabad           uint8
Location_Jaipur              uint8
Location_Kochi               uint8
Location_Kolkata             uint8
Location_Mumbai              uint8
Location_Pune                uint8
```

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[97]
```
Transmission_Manual            uint8
Owner_Type_Fourth & Above      uint8
Owner_Type_Second              uint8
Owner_Type_Third               uint8
dtype: object
```

[98]
```
dff2.loc[dff2.Engine==0,'Engine']=np.NaN
dff2.loc[dff2.Power==0,'Power']=np.NaN
dff2.loc[dff2.Mileage==0,'Mileage']=np.NaN
```

```
dff2.isna().sum()
```

```
Year                         0
Kilometers_Driven            0
Mileage                     13
Engine                      10
Power                       32
Seats                       11
Location_Bangalore           0
Location_Chennai             0
Location_Coimbatore          0
Location_Delhi               0
Location_Hyderabad           0
Location_Jaipur              0
Location_Kochi               0
Location_Kolkata             0
Location_Mumbai              0
Location_Pune                0
Fuel_Type_Diesel             0
Fuel_Type_LPG                0
Fuel_Type_Petrol             0
Transmission_Manual          0
Owner_Type_Fourth & Above    0
Owner_Type_Second            0
Owner_Type_Third             0
dtype: int64
```

Files

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```
Owner_Type_Third          0
dtype: int64
```

```
dff2['Engine']=dff2['Engine'].fillna(dff2['Engine'].mean())
dff2['Power']=dff2['Power'].fillna(dff2['Power'].mean())
dff2['Mileage']=dff2['Mileage'].fillna(dff2['Mileage'].mean())
dff2['Seats']=dff2['Seats'].fillna(dff2['Seats'].mode()[0])
dff2
```

[101]
```
dff2.isna().sum()
```

```
Year                         0
Kilometers_Driven            0
Mileage                      0
Engine                       0
Power                        0
Seats                        0
Location_Bangalore           0
Location_Chennai             0
Location_Coimbatore          0
Location_Delhi               0
Location_Hyderabad           0
Location_Jaipur              0
Location_Kochi               0
Location_Kolkata             0
Location_Mumbai              0
Location_Pune                0
Fuel_Type_Diesel             0
Fuel_Type_LPG                0
Fuel_Type_Petrol             0
Transmission_Manual          0
Owner_Type_Fourth & Above    0
Owner_Type_Second            0
Owner_Type_Third             0
dtype: int64
```

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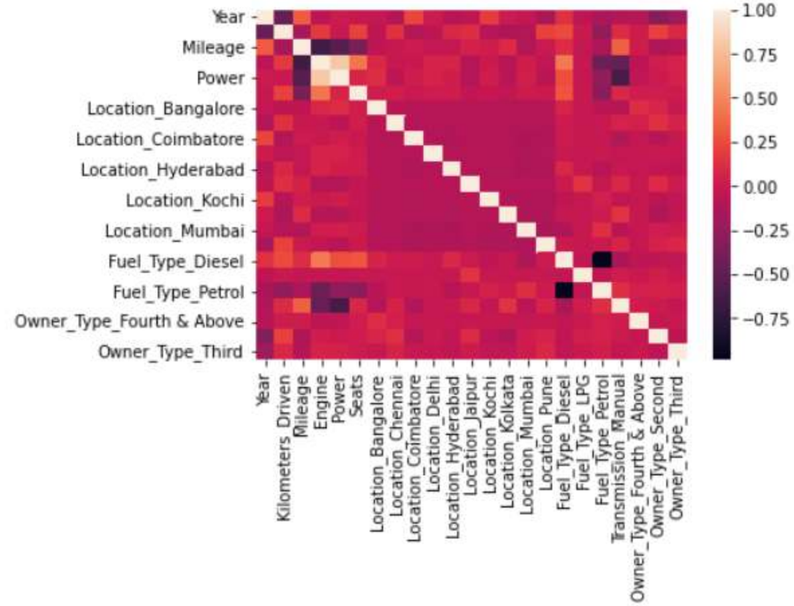
[103]
1s

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fc6ce992cd0>
```



Preprocessing steps of testing data are completed.

[104]
0s

```
from sklearn.linear_model import LinearRegression
model=LinearRegression()
model.fit(x,y)
```

```
LinearRegression()
```

[105]

```
w=dff2
```

0s completed at 4:45 PM

Files

- ..
- sample_data
- car economy price.c...
- test-data.csv

[103]

Kilometers_ Location_Bar Location_C Location_Coim Locatior Location_Hydi Location Location Location_I Location_M Locatio Fuel_Type_ Fuel_Typ Fuel_Type Transmission_ Owner_Type_Fourth & Owner_Type_ Owner_Type

Preprocessing steps of testing data are completed.

[104]
```
from sklearn.linear_model import LinearRegression
model=LinearRegression()
model.fit(x,y)
```

```
LinearRegression()
```

```
w=dff2
y_pred=model.predict(w)
y_pred
```

```
array([ 2.87588492, -1.29344912, 16.1069494 , ...,  0.1378514 ,
        9.27293255, 21.48043251])
```

[105]