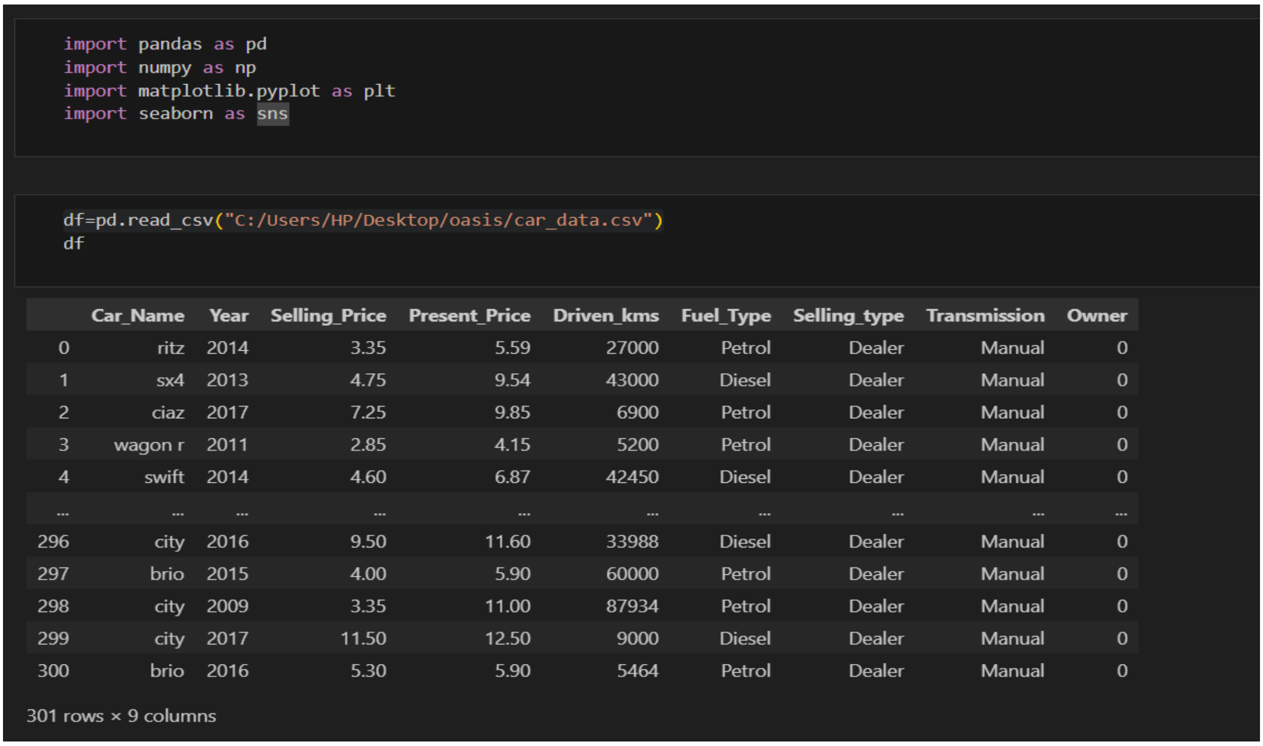
TASK1:-CAR PREDICTION WITH MACHINE LEARNING.

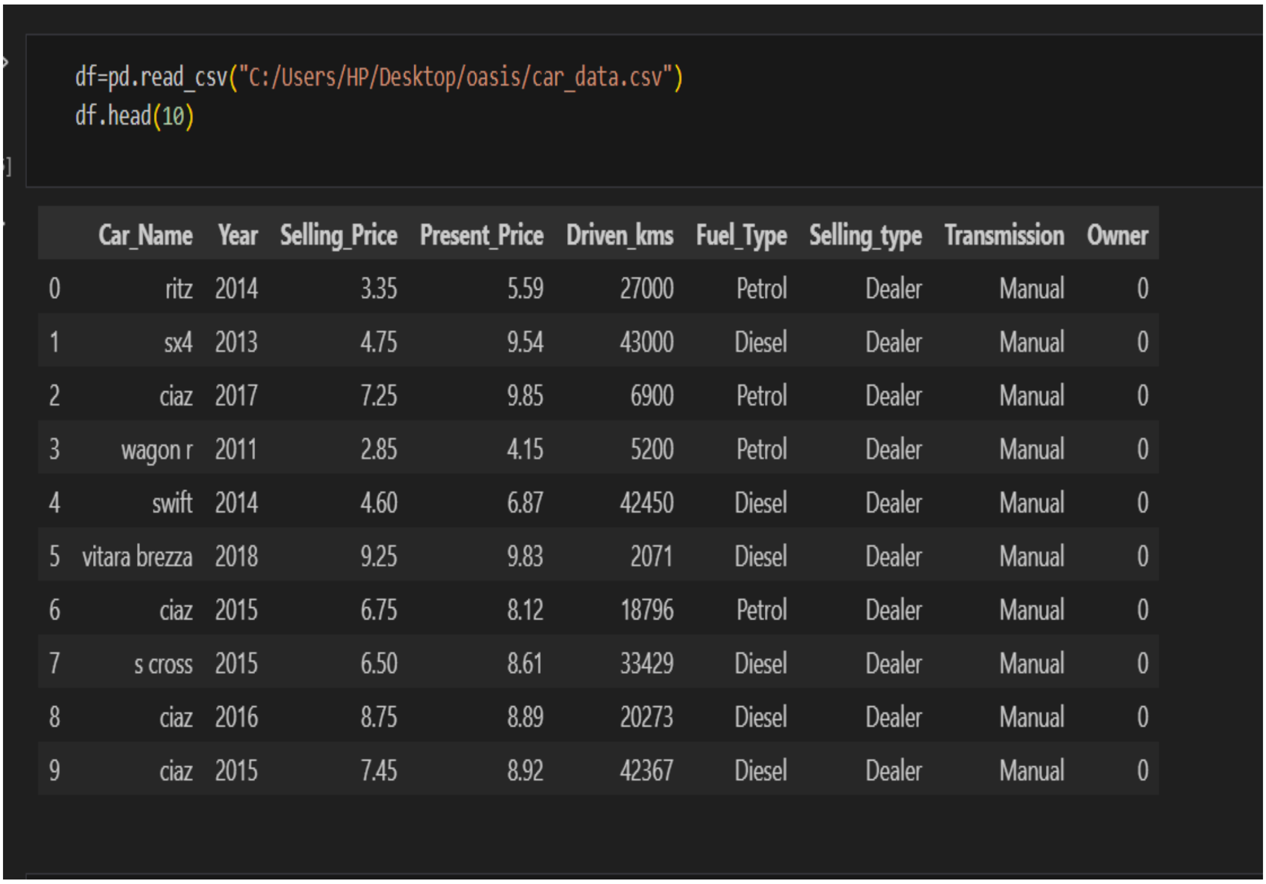


```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

```
df=pd.read_csv("C:/Users/HP/Desktop/oasis/car_data.csv")
df
```

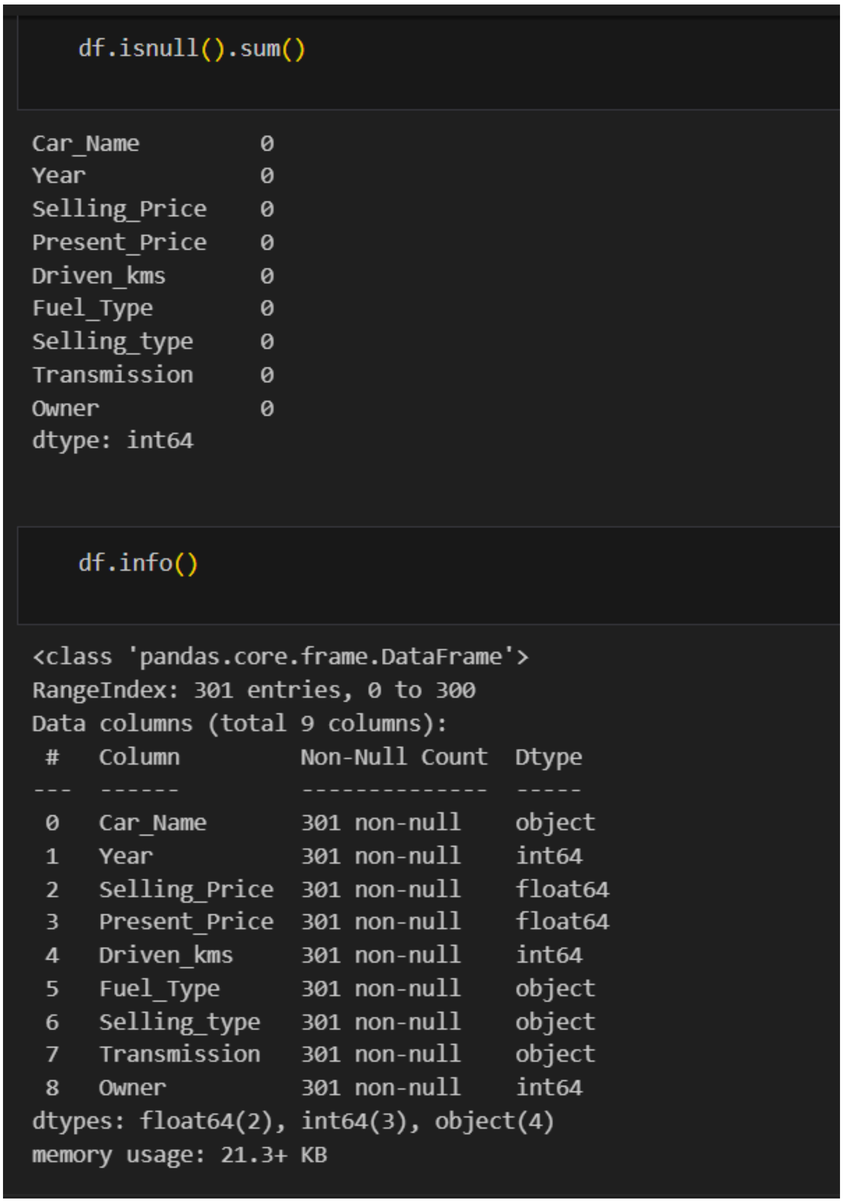
	Car_Name	Year	Selling_Price	Present_Price	Driven_kms	Fuel_Type	Selling_type	Transmission	Owner
0	ritz	2014	3.35	5.59	27000	Petrol	Dealer	Manual	0
1	sx4	2013	4.75	9.54	43000	Diesel	Dealer	Manual	0
2	ciaz	2017	7.25	9.85	6900	Petrol	Dealer	Manual	0
3	wagon r	2011	2.85	4.15	5200	Petrol	Dealer	Manual	0
4	swift	2014	4.60	6.87	42450	Diesel	Dealer	Manual	0
...	...	...	...	...	...	...	...	...	...
296	city	2016	9.50	11.60	33988	Diesel	Dealer	Manual	0
297	brio	2015	4.00	5.90	60000	Petrol	Dealer	Manual	0
298	city	2009	3.35	11.00	87934	Petrol	Dealer	Manual	0
299	city	2017	11.50	12.50	9000	Diesel	Dealer	Manual	0
300	brio	2016	5.30	5.90	5464	Petrol	Dealer	Manual	0

301 rows × 9 columns



```
df=pd.read_csv("C:/Users/HP/Desktop/oasis/car_data.csv")
df.head(10)
```

	Car_Name	Year	Selling_Price	Present_Price	Driven_kms	Fuel_Type	Selling_type	Transmission	Owner
0	ritz	2014	3.35	5.59	27000	Petrol	Dealer	Manual	0
1	sx4	2013	4.75	9.54	43000	Diesel	Dealer	Manual	0
2	ciaz	2017	7.25	9.85	6900	Petrol	Dealer	Manual	0
3	wagon r	2011	2.85	4.15	5200	Petrol	Dealer	Manual	0
4	swift	2014	4.60	6.87	42450	Diesel	Dealer	Manual	0
5	vitara brezza	2018	9.25	9.83	2071	Diesel	Dealer	Manual	0
6	ciaz	2015	6.75	8.12	18796	Petrol	Dealer	Manual	0
7	s cross	2015	6.50	8.61	33429	Diesel	Dealer	Manual	0
8	ciaz	2016	8.75	8.89	20273	Diesel	Dealer	Manual	0
9	ciaz	2015	7.45	8.92	42367	Diesel	Dealer	Manual	0

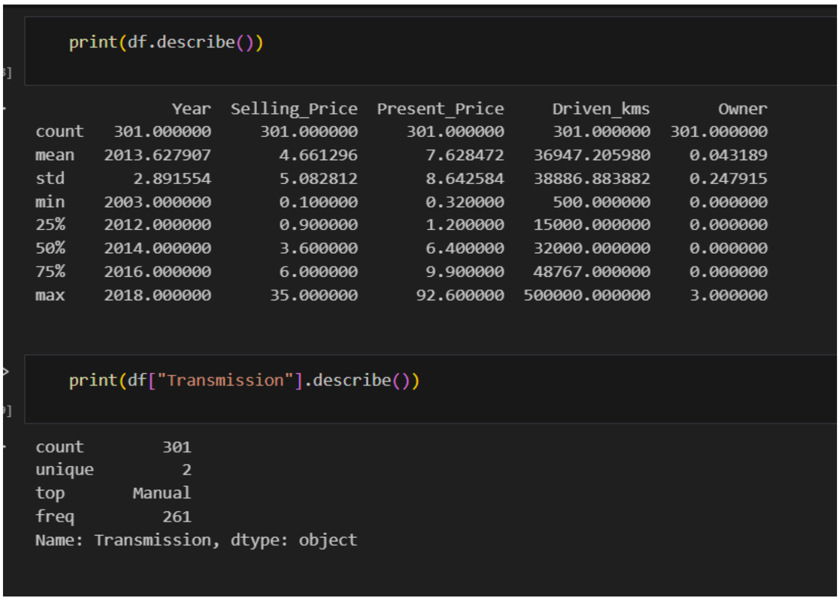


```
df.isnull().sum()
```

```
Car_Name         0
Year             0
Selling_Price    0
Present_Price    0
Driven_kms       0
Fuel_Type        0
Selling_type     0
Transmission     0
Owner            0
dtype: int64
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 301 entries, 0 to 300
Data columns (total 9 columns):
 #   Column         Non-Null Count  Dtype  
---  ------         --------------  -----  
 0   Car_Name       301 non-null    object 
 1   Year           301 non-null    int64  
 2   Selling_Price  301 non-null    float64
 3   Present_Price  301 non-null    float64
 4   Driven_kms     301 non-null    int64  
 5   Fuel_Type      301 non-null    object 
 6   Selling_type   301 non-null    object 
 7   Transmission   301 non-null    object 
 8   Owner          301 non-null    int64  
dtypes: float64(2), int64(3), object(4)
memory usage: 21.3+ KB
```

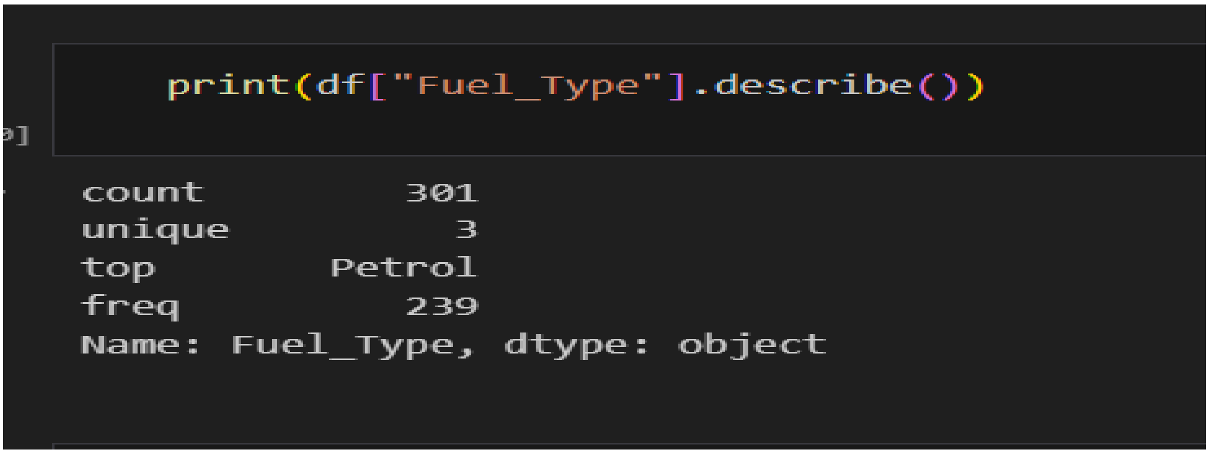


```
print(df.describe())
```

```
              Year  Selling_Price  Present_Price     Driven_kms       Owner
count   301.000000     301.000000     301.000000     301.000000  301.000000
mean   2013.627907       4.661296       7.628472   36947.205980    0.043189
std       2.891554       5.082812       8.642584   38886.883882    0.247915
min    2003.000000       0.100000       0.320000     500.000000    0.000000
25%    2012.000000       0.900000       1.200000   15000.000000    0.000000
50%    2014.000000       3.600000       6.400000   32000.000000    0.000000
75%    2016.000000       6.000000       9.900000   48767.000000    0.000000
max    2018.000000      35.000000      92.600000  500000.000000    3.000000
```

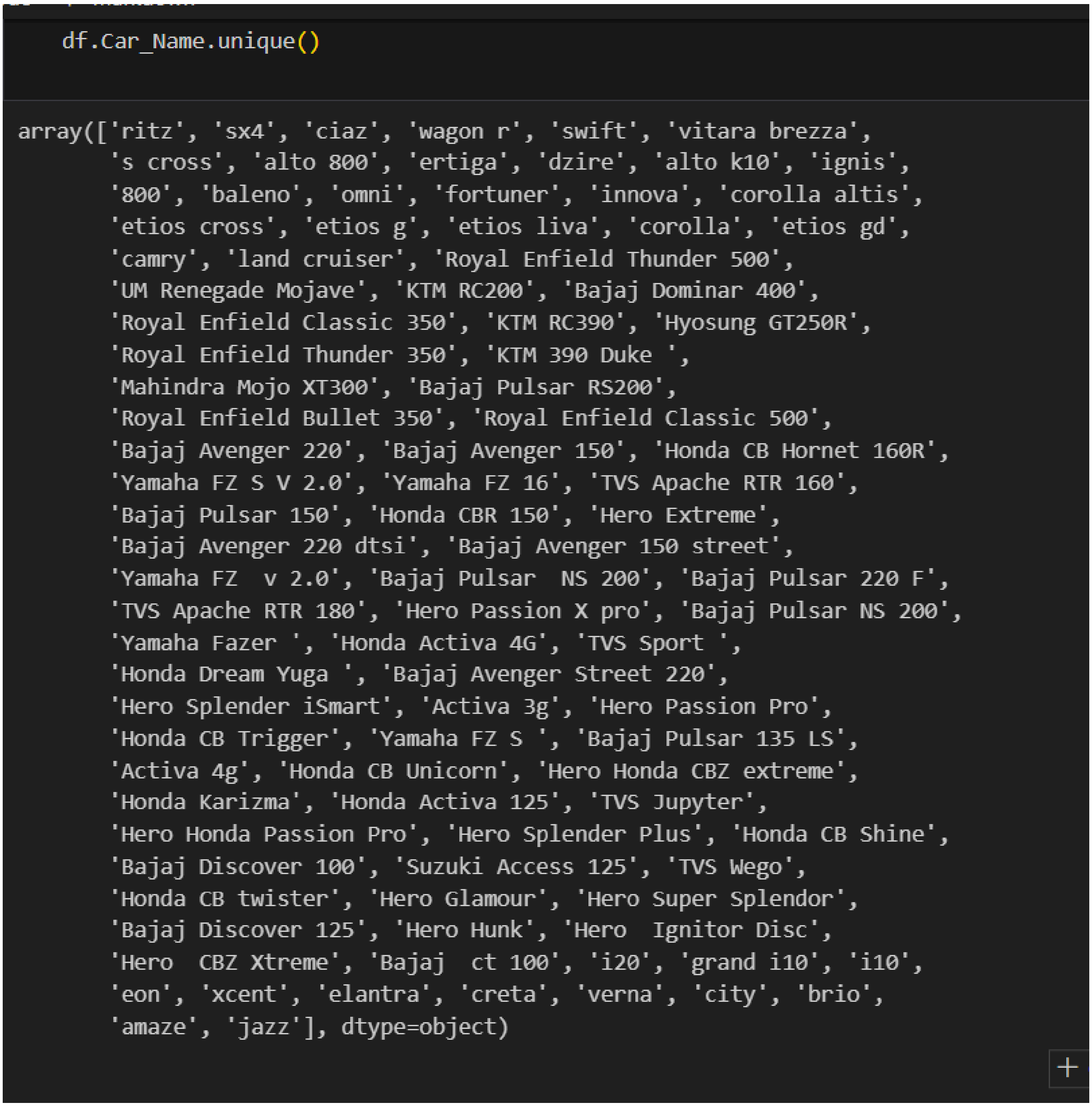
```
print(df["Transmission"].describe())
```

```
count        301
unique         2
top       Manual
freq         261
Name: Transmission, dtype: object
```



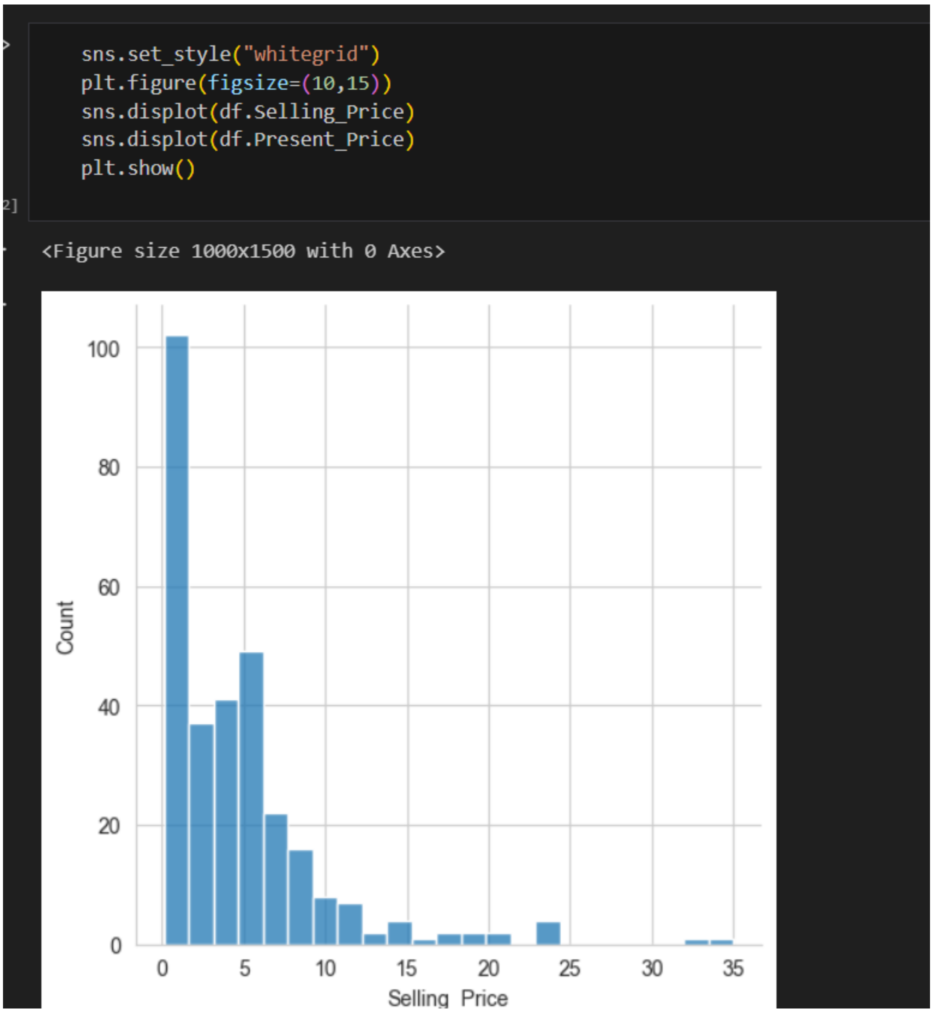
```
print(df["Fuel_Type"].describe())
```

```
count        301
unique         3
top       Petrol
freq         239
Name: Fuel_Type, dtype: object
```



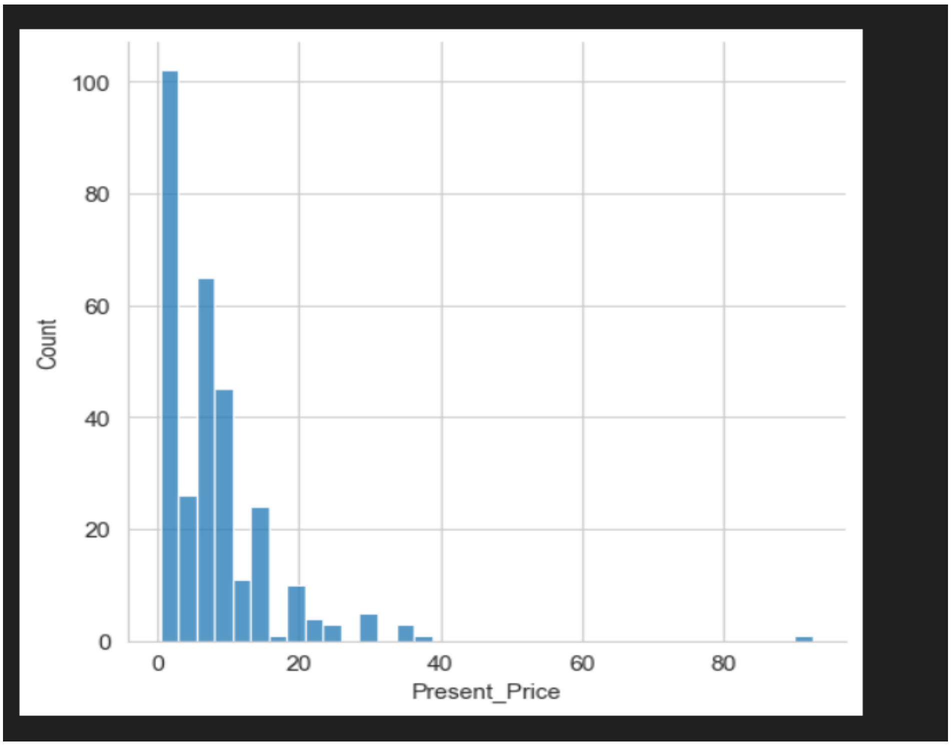
```
df.Car_Name.unique()
```

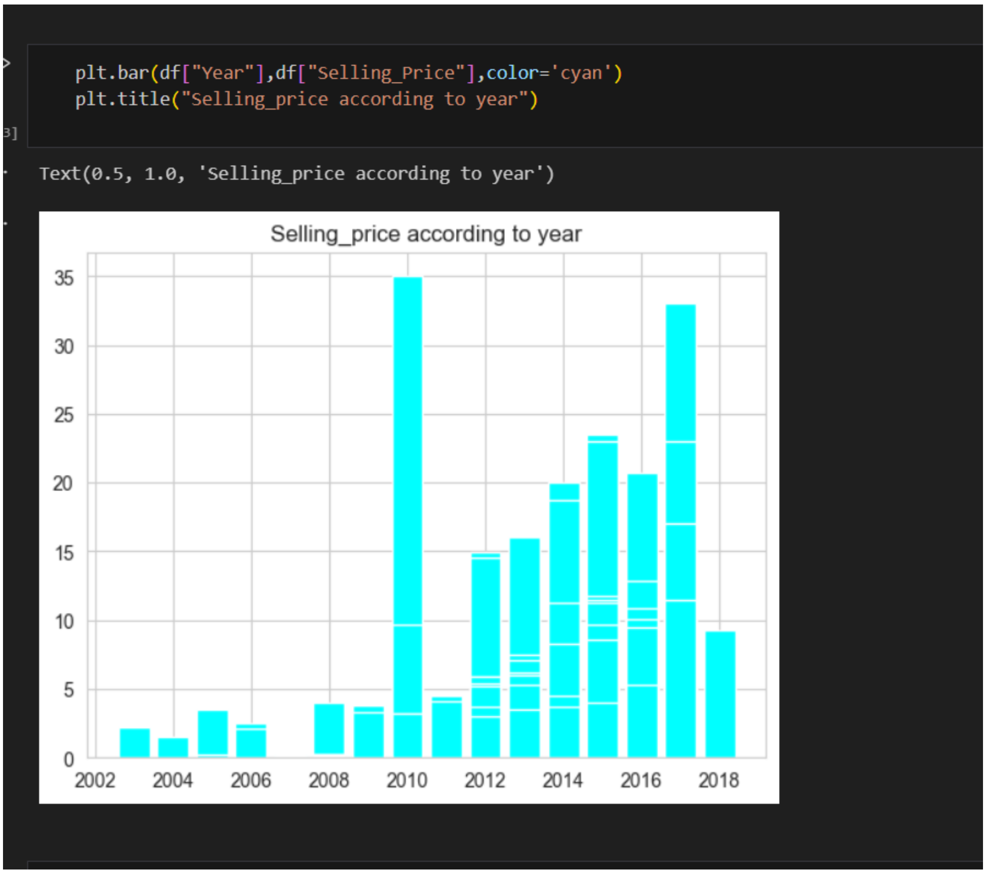
```
array(['ritz', 'sx4', 'ciaz', 'wagon r', 'swift', 'vitara brezza',
       's cross', 'alto 800', 'ertiga', 'dzire', 'alto k10', 'ignis',
       '800', 'baleno', 'omni', 'fortuner', 'innova', 'corolla altis',
       'etios cross', 'etios g', 'etios liva', 'corolla', 'etios gd',
       'camry', 'land cruiser', 'Royal Enfield Thunder 500',
       'UM Renegade Mojave', 'KTM RC200', 'Bajaj Dominar 400',
       'Royal Enfield Classic 350', 'KTM RC390', 'Hyosung GT250R',
       'Royal Enfield Thunder 350', 'KTM 390 Duke ',
       'Mahindra Mojo XT300', 'Bajaj Pulsar RS200',
       'Royal Enfield Bullet 350', 'Royal Enfield Classic 500',
       'Bajaj Avenger 220', 'Bajaj Avenger 150', 'Honda CB Hornet 160R',
       'Yamaha FZ S V 2.0', 'Yamaha FZ 16', 'TVS Apache RTR 160',
       'Bajaj Pulsar 150', 'Honda CBR 150', 'Hero Extreme',
       'Bajaj Avenger 220 dtsi', 'Bajaj Avenger 150 street',
       'Yamaha FZ  v 2.0', 'Bajaj Pulsar  NS 200', 'Bajaj Pulsar 220 F',
       'TVS Apache RTR 180', 'Hero Passion X pro', 'Bajaj Pulsar NS 200',
       'Yamaha Fazer ', 'Honda Activa 4G', 'TVS Sport ',
       'Honda Dream Yuga ', 'Bajaj Avenger Street 220',
       'Hero Splender iSmart', 'Activa 3g', 'Hero Passion Pro',
       'Honda CB Trigger', 'Yamaha FZ S ', 'Bajaj Pulsar 135 LS',
       'Activa 4g', 'Honda CB Unicorn', 'Hero Honda CBZ extreme',
       'Honda Karizma', 'Honda Activa 125', 'TVS Jupyter',
       'Hero Honda Passion Pro', 'Hero Splender Plus', 'Honda CB Shine',
       'Bajaj Discover 100', 'Suzuki Access 125', 'TVS Wego',
       'Honda CB twister', 'Hero Glamour', 'Hero Super Splendor',
       'Bajaj Discover 125', 'Hero Hunk', 'Hero  Ignitor Disc',
       'Hero  CBZ Xtreme', 'Bajaj  ct 100', 'i20', 'grand i10', 'i10',
       'eon', 'xcent', 'elantra', 'creta', 'verna', 'city', 'brio',
       'amaze', 'jazz'], dtype=object)
```



```
sns.set_style("whitegrid")
plt.figure(figsize=(10,15))
sns.displot(df.Selling_Price)
sns.displot(df.Present_Price)
plt.show()
```

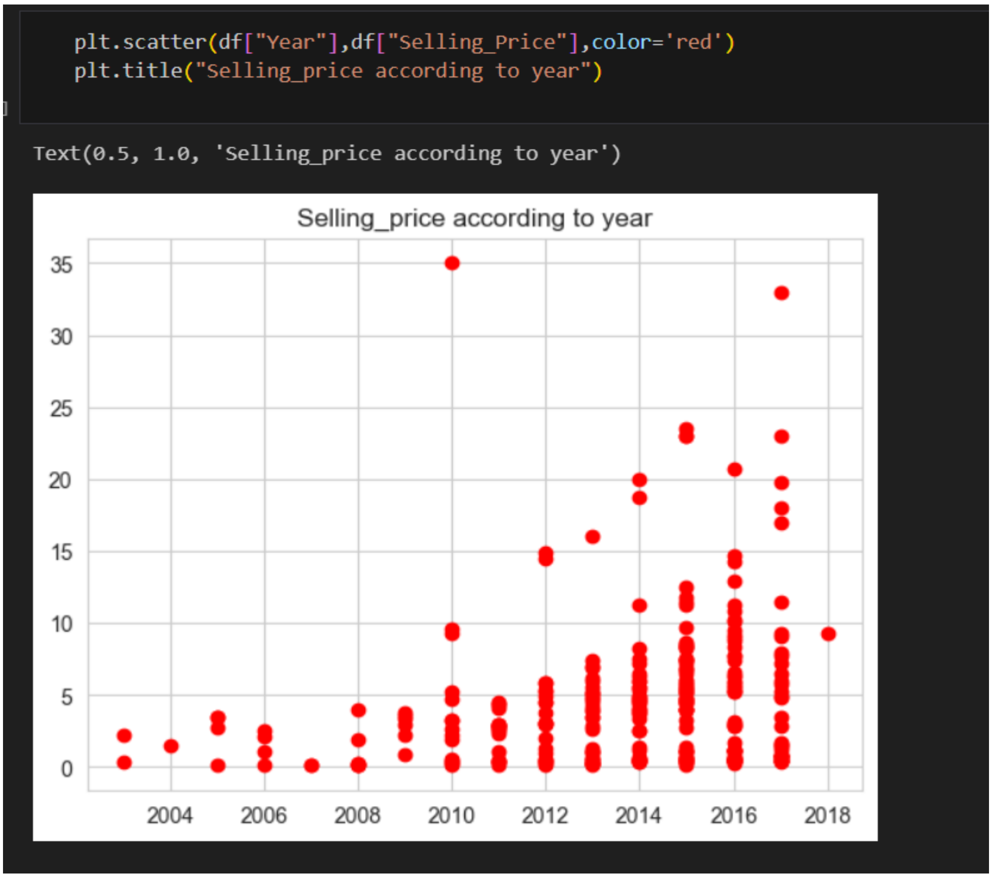
```
<Figure size 1000x1500 with 0 Axes>
```





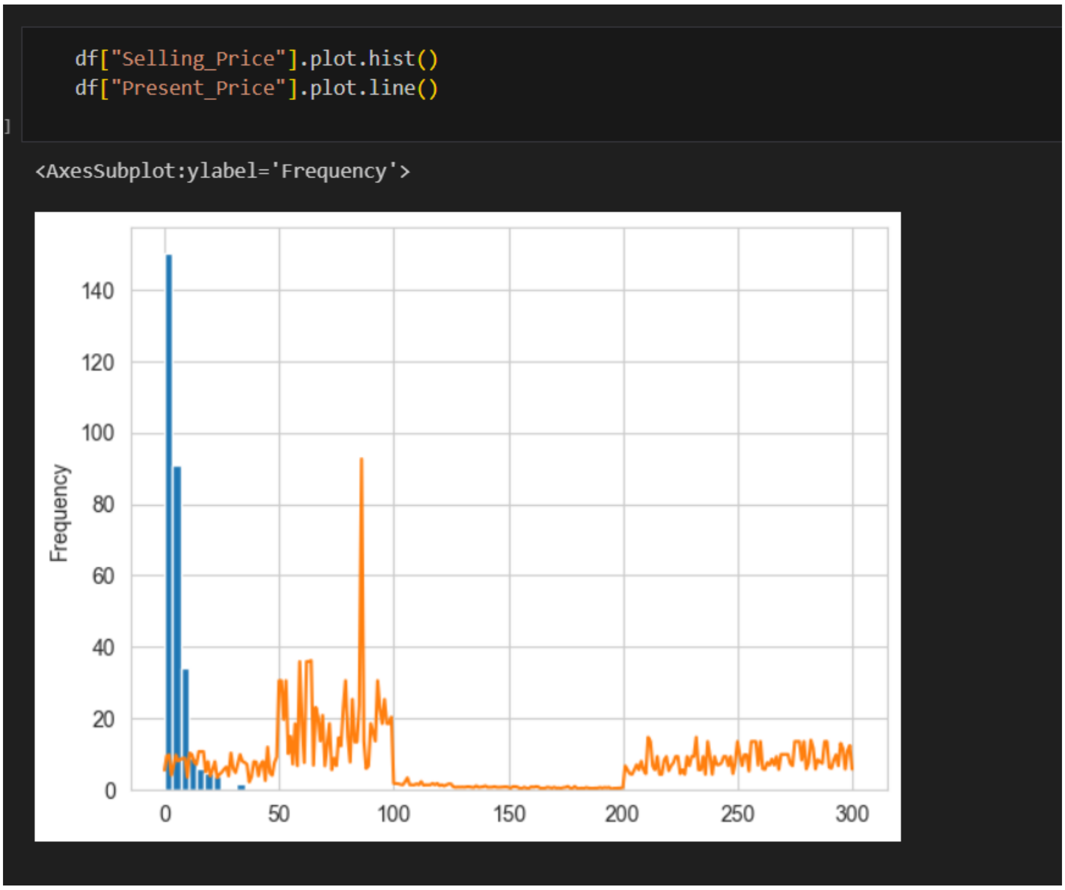
```
plt.bar(df["Year"],df["Selling_Price"],color='cyan')
plt.title("Selling_price according to year")
```

```
Text(0.5, 1.0, 'Selling_price according to year')
```



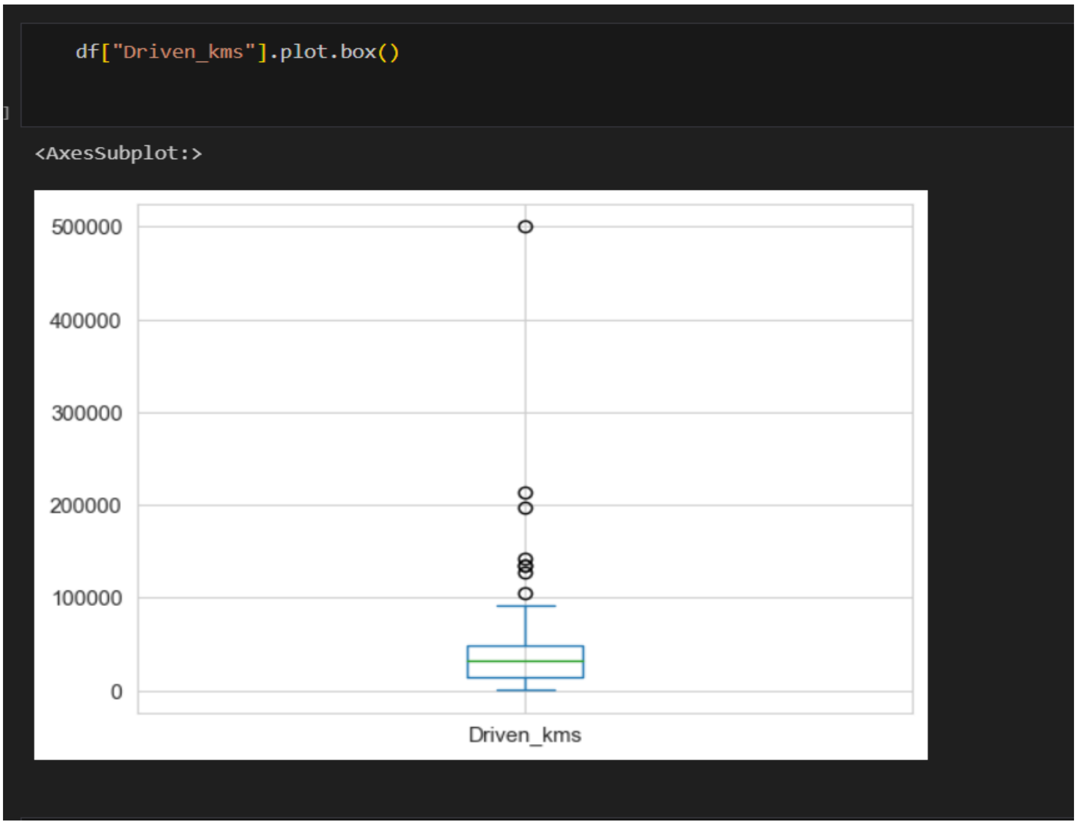
```
plt.scatter(df["Year"],df["Selling_Price"],color='red')
plt.title("Selling_price according to year")
```

```
Text(0.5, 1.0, 'Selling_price according to year')
```



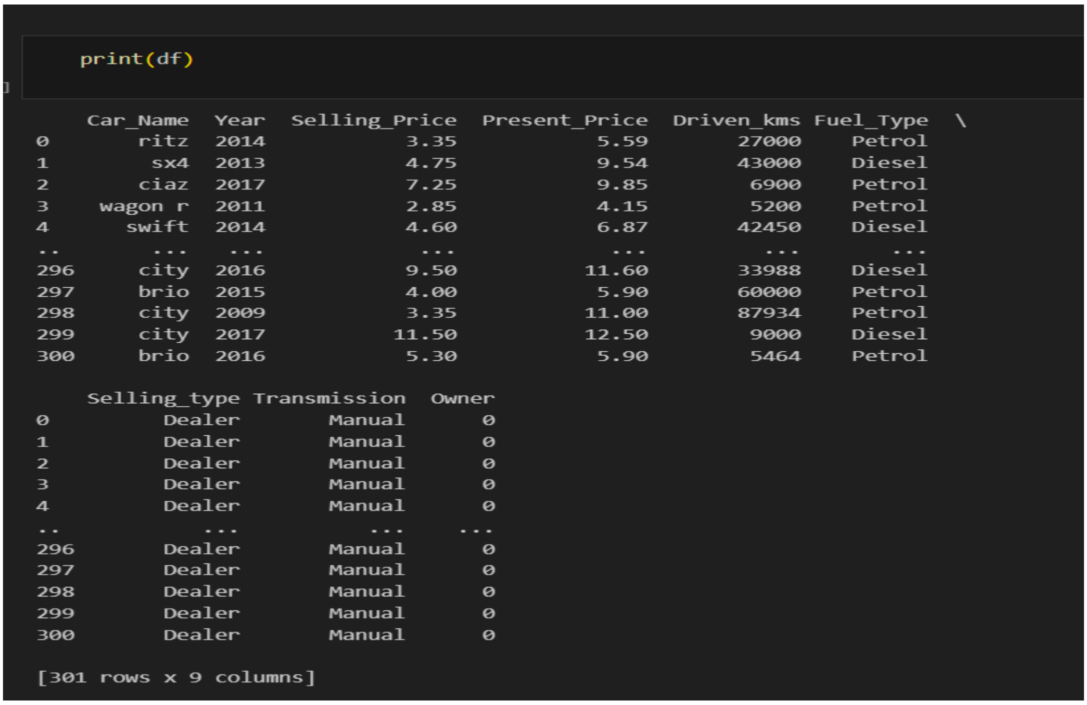
```
df["Selling_Price"].plot.hist()
df["Present_Price"].plot.line()
```

```
<AxesSubplot:ylabel='Frequency'>
```



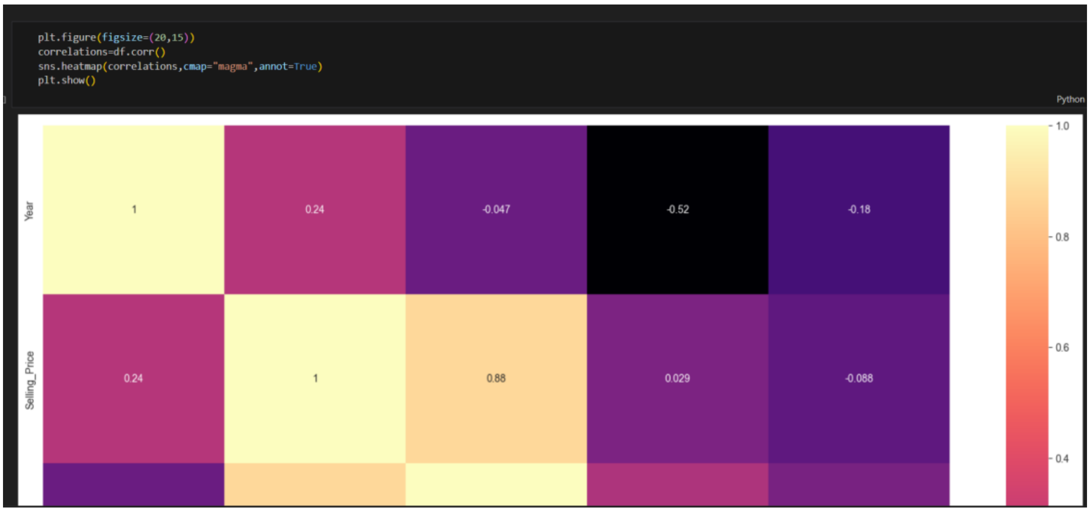
```
df["Driven_kms"].plot.box()
```

```
<AxesSubplot:>
```

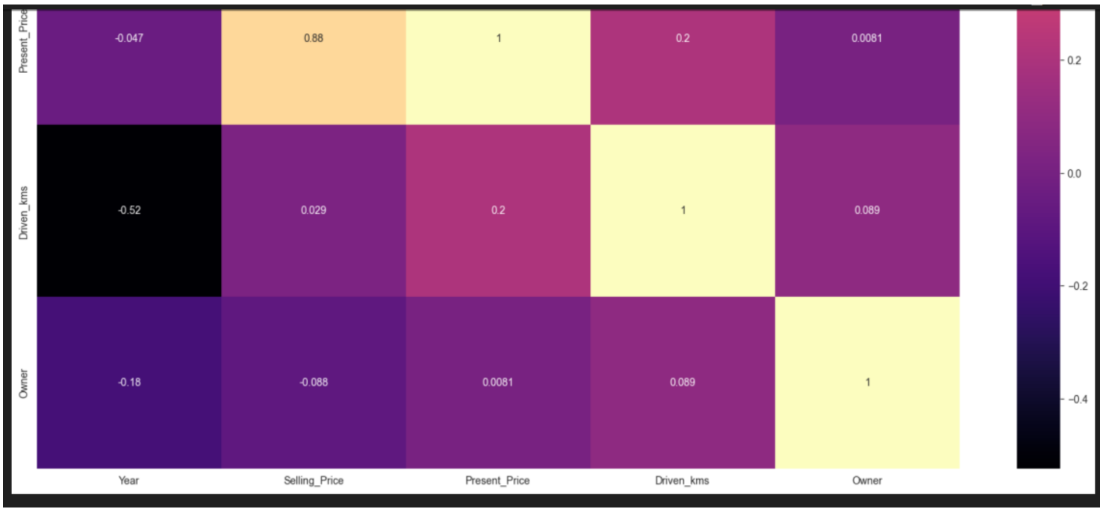


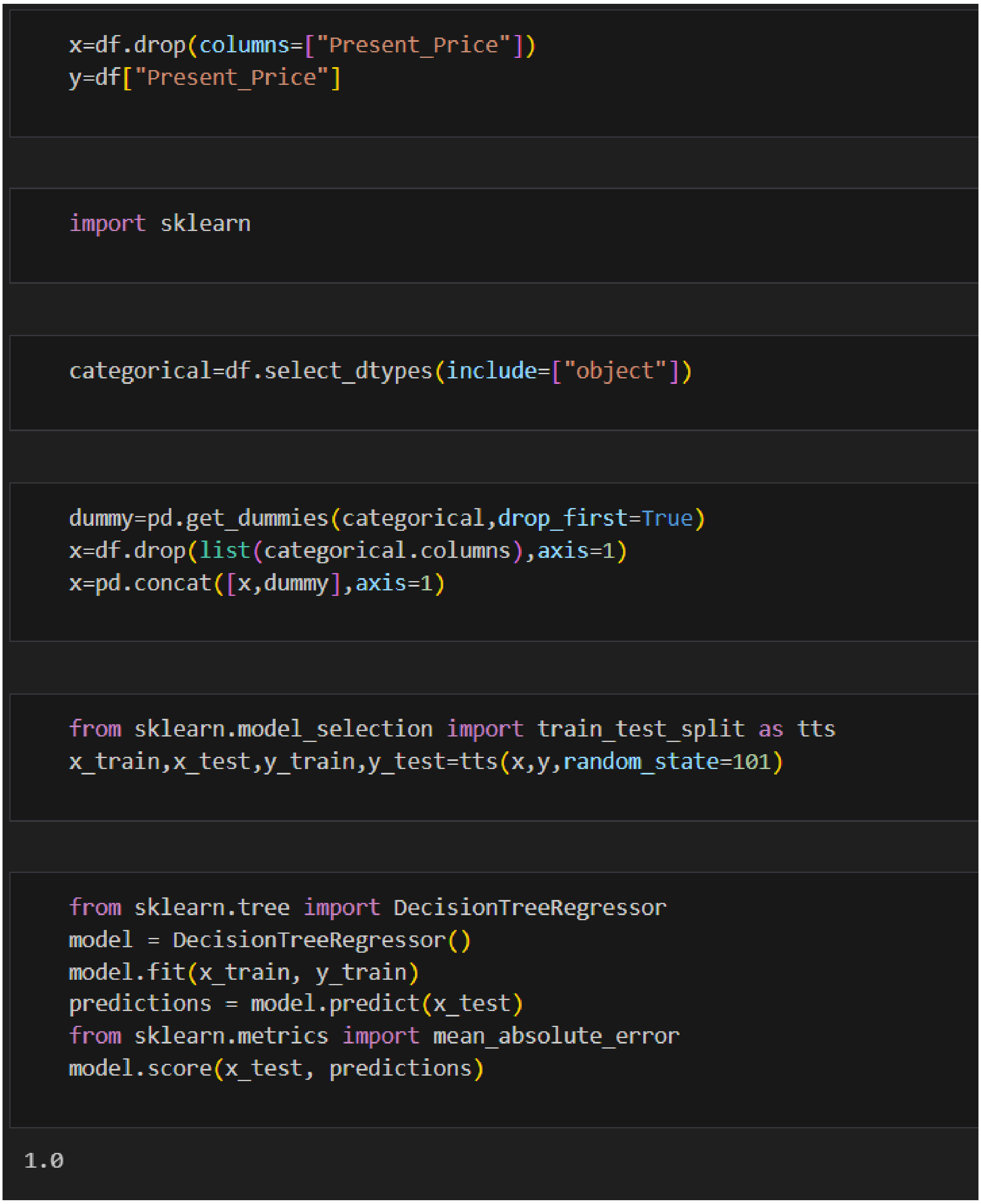
```
print(df)
```

```
   Car_Name  Year  Selling_Price  Present_Price  Driven_kms Fuel_Type  \
0      ritz  2014           3.35           5.59       27000    Petrol   
1       sx4  2013           4.75           9.54       43000    Diesel   
2      ciaz  2017           7.25           9.85        6900    Petrol   
3   wagon r  2011           2.85           4.15        5200    Petrol   
4     swift  2014           4.60           6.87       42450    Diesel   
..      ...   ...            ...            ...         ...       ...   
296    city  2016           9.50          11.60       33988    Diesel   
297    brio  2015           4.00           5.90       60000    Petrol   
298    city  2009           3.35          11.00       87934    Petrol   
299    city  2017          11.50          12.50        9000    Diesel   
300    brio  2016           5.30           5.90        5464    Petrol   

   Selling_type Transmission  Owner  
0        Dealer       Manual      0  
1        Dealer       Manual      0  
2        Dealer       Manual      0  
3        Dealer       Manual      0  
4        Dealer       Manual      0  
..          ...          ...    ...  
296      Dealer       Manual      0  
297      Dealer       Manual      0  
298      Dealer       Manual      0  
299      Dealer       Manual      0  
300      Dealer       Manual      0  

[301 rows x 9 columns]
```



```
plt.figure(figsize=(20,15))
correlations=df.corr()
sns.heatmap(correlations,cmap="magma",annot=True)
plt.show()
```





```python
x=df.drop(columns=["Present_Price"])
y=df["Present_Price"]
```

```python
import sklearn
```

```python
categorical=df.select_dtypes(include=["object"])
```

```python
dummy=pd.get_dummies(categorical,drop_first=True)
x=df.drop(list(categorical.columns),axis=1)
x=pd.concat([x,dummy],axis=1)
```

```python
from sklearn.model_selection import train_test_split as tts
x_train,x_test,y_train,y_test=tts(x,y,random_state=101)
```

```python
from sklearn.tree import DecisionTreeRegressor
model = DecisionTreeRegressor()
model.fit(x_train, y_train)
predictions = model.predict(x_test)
from sklearn.metrics import mean_absolute_error
model.score(x_test, predictions)
```

```
1.0
```