```
# IMPORTANT: RUN THIS CELL IN ORDER TO IMPORT YOUR KAGGLE DATA SOURCES
# TO THE CORRECT LOCATION (/kaggle/input) IN YOUR NOTEBOOK,
# THEN FEEL FREE TO DELETE THIS CELL.
# NOTE: THIS NOTEBOOK ENVIRONMENT DIFFERS FROM KAGGLE'S PYTHON
# ENVIRONMENT SO THERE MAY BE MISSING LIBRARIES USED BY YOUR
# NOTEBOOK.

import os
import sys
from tempfile import NamedTemporaryFile
from urllib.request import urlopen
from urllib.parse import unquote, urlparse
from urllib.error import HTTPError
from zipfile import ZipFile
import tarfile
import shutil

CHUNK_SIZE = 40960
DATA_SOURCE_MAPPING = 'car-mileage-prediction:https%3A%2F%2Fstorage.googleapis.com%2Fkaggle-data-sets%2F1615580%2F2656528%2Fbundle%2Far

KAGGLE_INPUT_PATH='/kaggle/input'
KAGGLE_WORKING_PATH='/kaggle/working'
KAGGLE_SYMLINK='kaggle'

!umount /kaggle/input/ 2> /dev/null
shutil.rmtree('/kaggle/input', ignore_errors=True)
os.makedirs(KAGGLE_INPUT_PATH, 0o777, exist_ok=True)
os.makedirs(KAGGLE_WORKING_PATH, 0o777, exist_ok=True)

try:
  os.symlink(KAGGLE_INPUT_PATH, os.path.join("..", 'input'), target_is_directory=True)
except FileExistsError:
  pass
try:
  os.symlink(KAGGLE_WORKING_PATH, os.path.join("..", 'working'), target_is_directory=True)
except FileExistsError:
  pass

for data_source_mapping in DATA_SOURCE_MAPPING.split(','):
    directory, download_url_encoded = data_source_mapping.split(':')
    download_url = unquote(download_url_encoded)
    filename = urlparse(download_url).path
    destination_path = os.path.join(KAGGLE_INPUT_PATH, directory)
    try:
        with urlopen(download_url) as fileres, NamedTemporaryFile() as tfile:
            total_length = fileres.headers['content-length']
            print(f'Downloading {directory}, {total_length} bytes compressed')
            dl = 0
            data = fileres.read(CHUNK_SIZE)
            while len(data) > 0:
                dl += len(data)
                tfile.write(data)
                done = int(50 * dl / int(total_length))
                sys.stdout.write(f"\r[{'=' * done}{' ' * (50-done)}] {dl} bytes downloaded")
                sys.stdout.flush()
                data = fileres.read(CHUNK_SIZE)
            if filename.endswith('.zip'):
              with ZipFile(tfile) as zfile:
                zfile.extractall(destination_path)
            else:
              with tarfile.open(tfile.name) as tarfile:
                tarfile.extractall(destination_path)
            print(f'\nDownloaded and uncompressed: {directory}')
    except HTTPError as e:
        print(f'Failed to load (likely expired) {download_url} to path {destination_path}')
        continue
    except OSError as e:
        print(f'Failed to load {download_url} to path {destination_path}')
        continue

print('Data source import complete.')
```

```
Downloading car-mileage-prediction, 1009 bytes compressed
[==================================================] 1009 bytes downloaded
Downloaded and uncompressed: car-mileage-prediction
Data source import complete.
```

```
# This Python 3 environment comes with many helpful analytics libraries installed
# It is defined by the kaggle/python Docker image: https://github.com/kaggle/docker-python
# For example, here's several helpful packages to load

import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)

# Input data files are available in the read-only "../input/" directory
# For example, running this (by clicking run or pressing Shift+Enter) will list all files under the input directory

import os
for dirname, _, filenames in os.walk('/kaggle/input'):
    for filename in filenames:
        print(os.path.join(dirname, filename))

# You can write up to 20GB to the current directory (/kaggle/working/) that gets preserved as output when you create a version using "S
# You can also write temporary files to /kaggle/temp/, but they won't be saved outside of the current session
```

```
/kaggle/input/car-mileage-prediction/mtcars.csv
```

```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
import seaborn as sns
from sklearn.model_selection import train_test_split
import warnings
from sklearn import preprocessing
warnings.filterwarnings("ignore")
import plotly.express as px
import plotly.graph_objects as go
from sklearn.linear_model import LinearRegression



df = pd.read_csv('../input/car-mileage-prediction/mtcars.csv', error_bad_lines=False, engine ='python')
df
```

	C_name	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
0	Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
1	Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
2	Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
4	Hornet Sportabout	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2
5	Valiant	18.1	6	225.0	105	2.76	3.460	20.22	1	0	3	1
6	Duster 360	14.3	8	360.0	245	3.21	3.570	15.84	0	0	3	4
7	Merc 240D	24.4	4	146.7	62	3.69	3.190	20.00	1	0	4	2
8	Merc 230	22.8	4	140.8	95	3.92	3.150	22.90	1	0	4	2
9	Merc 280	19.2	6	167.6	123	3.92	3.440	18.30	1	0	4	4
10	Merc 280C	17.8	6	167.6	123	3.92	3.440	18.90	1	0	4	4
11	Merc 450SE	16.4	8	275.8	180	3.07	4.070	17.40	0	0	3	3
12	Merc 450SL	17.3	8	275.8	180	3.07	3.730	17.60	0	0	3	3
13	Merc 450SLC	15.2	8	275.8	180	3.07	3.780	18.00	0	0	3	3
14	Cadillac Fleetwood	10.4	8	472.0	205	2.93	5.250	17.98	0	0	3	4
15	Lincoln Continental	10.4	8	460.0	215	3.00	5.424	17.82	0	0	3	4
16	Chrysler Imperial	14.7	8	440.0	230	3.23	5.345	17.42	0	0	3	4
17	Fiat 128	32.4	4	78.7	66	4.08	2.200	19.47	1	1	4	1
18	Honda Civic	30.4	4	75.7	52	4.93	1.615	18.52	1	1	4	2
19	Toyota Corolla	33.9	4	71.1	65	4.22	1.835	19.90	1	1	4	1
20	Toyota Corona	21.5	4	120.1	97	3.70	2.465	20.01	1	0	3	1
21	Dodge Challenger	15.5	8	318.0	150	2.76	3.520	16.87	0	0	3	2
22	AMC Javelin	15.2	8	304.0	150	3.15	3.435	17.30	0	0	3	2

Next steps: Generate code with df View recommended plots

```
df.shape
```

```
(32, 12)
```

```
df.skew()
```

```
mpg     0.672377
cyl    -0.192261
disp    0.420233
hp      0.799407
drat    0.292780
wt      0.465916
qsec    0.406347
vs      0.264542
am      0.400809
gear    0.582309
carb    1.157091
dtype: float64
```

```
df.duplicated().sum()
```

```
0
```

```
df.columns
```

```
Index(['C_name', 'mpg', 'cyl', 'disp', 'hp', 'drat', 'wt', 'qsec', 'vs', 'am',
       'gear', 'carb'],
      dtype='object')
```

```
df.describe()
```

	mpg	cyl	disp	hp	drat	wt	qsec
count	32.000000	32.000000	32.000000	32.000000	32.000000	32.000000	32.000000
mean	20.090625	6.187500	230.721875	146.687500	3.596563	3.217250	17.848750
std	6.026948	1.785922	123.938694	68.562868	0.534679	0.978457	1.786943
min	10.400000	4.000000	71.100000	52.000000	2.760000	1.513000	14.500000
25%	15.425000	4.000000	120.825000	96.500000	3.080000	2.581250	16.892500
50%	19.200000	6.000000	196.300000	123.000000	3.695000	3.325000	17.710000
75%	22.800000	8.000000	326.000000	180.000000	3.920000	3.610000	18.900000
max	33.900000	8.000000	472.000000	335.000000	4.930000	5.424000	22.900000

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

```
C_name    0
mpg       0
cyl       0
disp      0
hp        0
drat      0
wt        0
qsec      0
vs        0
am        0
gear      0
carb      0
dtype: int64
```

```
df.corr()
```

	mpg	cyl	disp	hp	drat	wt	qsec	
mpg	1.000000	-0.852162	-0.847551	-0.776168	0.681172	-0.867659	0.418684	0.664
cyl	-0.852162	1.000000	0.902033	0.832447	-0.699938	0.782496	-0.591242	-0.810
disp	-0.847551	0.902033	1.000000	0.790949	-0.710214	0.887980	-0.433698	-0.710
hp	-0.776168	0.832447	0.790949	1.000000	-0.448759	0.658748	-0.708223	-0.723
drat	0.681172	-0.699938	-0.710214	-0.448759	1.000000	-0.712441	0.091205	0.440
wt	-0.867659	0.782496	0.887980	0.658748	-0.712441	1.000000	-0.174716	-0.554
qsec	0.418684	-0.591242	-0.433698	-0.708223	0.091205	-0.174716	1.000000	0.744
vs	0.664039	-0.810812	-0.710416	-0.723097	0.440278	-0.554916	0.744535	1.000
am	0.599832	-0.522607	-0.591227	-0.243204	0.712711	-0.692495	-0.229861	0.168
gear	0.480285	-0.492687	-0.555569	-0.125704	0.699610	-0.583287	-0.212682	0.206
carb	-0.550925	0.526988	0.394977	0.749812	-0.090790	0.427606	-0.656249	-0.569

```
#Global declartions of function name
global Head
global Size
global Column_names
global Describe
global Shape
global Count
global Value_count
global ISNULL
global Tail
global Ndim
global Nunique
global Memory_usage
global Duplicated
global ISNA
global DTYPES
```

```
global CORR
global Info
global operations
```

Exploratoray Data Analysis

Double-click (or enter) to edit

```
 def Head(value=5):
            print('\033[1m'+'displaying the', value, 'rows'+'\033[0m')
            a=df.head(value)
            return a
            print("--------------------------------------------------------------------------------")
Head()
```

displaying the 5 rows

	C_name	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
0	Mazda RX4	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
1	Mazda RX4 Wag	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
2	Datsun 710	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
3	Hornet 4 Drive	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1
4	Hornet	18.7	8	360.0	175	3.15	3.440	17.02	0	0	3	2

```
def Tail():
    print('\033[1m'+"The last five rows of the dataframe are"+'\033[0m')
    co3=df.tail()
    return(co3)
    print("--------------------------------------------------------------------------------")
Tail()
```

The last five rows of the dataframe are

	C_name	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
27	Lotus Europa	30.4	4	95.1	113	3.77	1.513	16.9	1	1	5	2
28	Ford Pantera L	15.8	8	351.0	264	4.22	3.170	14.5	0	1	5	4
29	Ferrari Dino	19.7	6	145.0	175	3.62	2.770	15.5	0	1	5	6
30	Maserati Bora	15.0	8	301.0	335	3.54	3.570	14.6	0	1	5	8
31	Volvo 142E	21.4	4	121.0	109	4.11	2.780	18.6	1	1	4	2

```
def Column_names():
    print('\033[1m'+'Column Names in the Data set'+'\033[0m')
    c=df.columns
    print(c,'\n')
    print("--------------------------------------------------------------------------------")
Column_names()
```

Column Names in the Data set

```
Index(['C_name', 'mpg', 'cyl', 'disp', 'hp', 'drat', 'wt', 'qsec', 'vs', 'am',
       'gear', 'carb'],
      dtype='object')

--------------------------------------------------------------------------------
```

```
def Describe():
    print('\033[1m'+"The Description of our dataset is:"+'\033[0m')
    des=df.describe()
    return(des)
    print("--------------------------------------------------------------------------------")
Describe()
```

The Description of our dataset is:

	mpg	cyl	disp	hp	drat	wt	qsec
count	32.000000	32.000000	32.000000	32.000000	32.000000	32.000000	32.000000
mean	20.090625	6.187500	230.721875	146.687500	3.596563	3.217250	17.848750
std	6.026948	1.785922	123.938694	68.562868	0.534679	0.978457	1.786943
min	10.400000	4.000000	71.100000	52.000000	2.760000	1.513000	14.500000
25%	15.425000	4.000000	120.825000	96.500000	3.080000	2.581250	16.892500
50%	19.200000	6.000000	196.300000	123.000000	3.695000	3.325000	17.710000
75%	22.800000	8.000000	326.000000	180.000000	3.920000	3.610000	18.900000
max	33.900000	8.000000	472.000000	335.000000	4.930000	5.424000	22.900000

```
def Size():
    print('\033[1m'+"The size of dataset is :"+'\033[0m')
    siz=df.size
    print(siz,'\n')
    print("------------------------------------------------------------------------------")
Size()
```

The size of dataset is :
384

```
def Count():
    print('\033[1m'+"The count of non null values are:"+'\033[0m')
    co=df.count()
    print(co,'\n')
    print("------------------------------------------------------------------------------")
Count()
```

The count of non null values are:
C_name 32
mpg 32
cyl 32
disp 32
hp 32
drat 32
wt 32
qsec 32
vs 32
am 32
gear 32
carb 32
dtype: int64

```
def ISNULL():
    print('\033[1m'+"Detection of missing values"+'\033[0m')
    co2=df.isnull().sum()
    print(co2,'\n')
    print("------------------------------------------------------------------------------")
ISNULL()
```

Detection of missing values
C_name 0
mpg 0
cyl 0
disp 0
hp 0
drat 0
wt 0
qsec 0
vs 0
am 0
gear 0
carb 0
dtype: int64

```
def Ndim():
    print('\033[1m'+"The dimensions of data set are:"+'\033[0m')
    co4=df.ndim
    print(co4,'\n')
```

```
The dimensions of data set are:
2

--------------------------------------------------------------------------------
```

```
def Nunique():
    print('\033[1m'+"Total number of unique values are:"+'\033[0m')
    co5=df.nunique()
    print(co5,'\n')
    print("--------------------------------------------------------------------------------")
Nunique()
```

```
Total number of unique values are:
C_name    32
mpg       25
cyl        3
disp      27
hp        22
drat      22
wt        29
qsec      30
vs         2
am         2
gear       3
carb       6
dtype: int64

--------------------------------------------------------------------------------
```

```
def Memory_usage():
    print('\033[1m'+"The total memory used is :"+'\033[0m')
    co6=df.memory_usage()
    print(co6,'\n')
    print("--------------------------------------------------------------------------------")
Memory_usage()
```

```
The total memory used is :
Index     128
C_name    256
mpg       256
cyl       256
disp      256
hp        256
drat      256
wt        256
qsec      256
vs        256
am        256
gear      256
carb      256
dtype: int64

--------------------------------------------------------------------------------
```

```
def Duplicated():
    print('\033[1m'+"Total number of duplicate rows"+'\033[0m')
    co7=df.duplicated().count()
    return(co7)
    print("--------------------------------------------------------------------------------")
Duplicated()
```

```
Total number of duplicate rows
32
```

```
def DTYPES():
    print('\033[1m'+"The datatypes are :"+'\033[0m')
    co9=df.dtypes
    print(co9,'\n')
    print("--------------------------------------------------------------------------------")
DTYPES()
```

```
The datatypes are :
C_name     object
mpg       float64
cyl         int64
disp      float64
hp          int64
drat      float64
wt        float64
qsec      float64
vs          int64
am          int64
gear        int64
```

```
carb        int64
dtype: object

--------------------------------------------------------------------------------
```

```
def Info():
    print('\033[1m'+"The info of data set is :"+'\033[0m')
    co11=df.info()
    print("--------------------------------------------------------------------------------")
Info()
```

```
The info of data set is :
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 32 entries, 0 to 31
Data columns (total 12 columns):
 #   Column  Non-Null Count  Dtype
---  ------  --------------  -----
 0   C_name  32 non-null     object
 1   mpg     32 non-null     float64
 2   cyl     32 non-null     int64
 3   disp    32 non-null     float64
 4   hp      32 non-null     int64
 5   drat    32 non-null     float64
 6   wt      32 non-null     float64
 7   qsec    32 non-null     float64
 8   vs      32 non-null     int64
 9   am      32 non-null     int64
 10  gear    32 non-null     int64
 11  carb    32 non-null     int64
dtypes: float64(5), int64(6), object(1)
memory usage: 3.1+ KB
--------------------------------------------------------------------------------
```

```
def operations(df,x):
    if df[x].dtype=="float64":
        print('\033[1m'+'', x, 'rows'+'\033[0m')
        print('\033[1m'+"It is a quantitaive data \n"+'\033[0m')
        print("The mean is :\n",df[x].mean())
        print("The median is :\n",df[x].median())
        print("The Standard Deviation is \n",df[x].std())
        q1=df[x].quantile(0.25)
        q2=df[x].quantile(0.5)
        q3=df[x].quantile(0.75)
        IQR=q3-q1
        LLP=q1-1.5*IQR
        ULP=q3+1.5*IQR
        print("The quartiles are q1 : \n",q1)
        print("The quartiles are q2 : \n",q2)
        print("The quartiles are q3 :\n ",q3)
        print("The Uppler limit point of the data is \n",ULP)
        print("The lower limit point of the data is \n ",LLP)
        if df[x].min()>LLP and df[x].max()<ULP:
            print("The outliers are not present \n")
            print("--------------------------------------------------------------------------------")

        else:

            print("The outliers are present \n")
            print("The outliers are :")
            print(df[df[x].values>ULP][x])
            print(df[df[x].values<LLP][x])

            print("--------------------------------------------------------------------------------")


    elif df[x].dtype=="int64":
        print('\033[1m'+'', x, 'rows'+'\033[0m')
        print('\033[1m'+"It is a quantitaive data \n"+'\033[0m')
        print("The mean is : \n",df[x].mean())
        print("The median is : \n",df[x].median())
        print("The Standard Deviation is \n",df[x].std())
        q1=df[x].quantile(0.25)
        q2=df[x].quantile(0.5)
        q3=df[x].quantile(0.75)
        IQR=q3-q1
        LLP=q1-1.5*IQR
        ULP=q3+1.5*IQR
        print("The quartiles are q1 : \n",q1)
        print("The quartiles are q2 : \n",q2)
        print("The quartiles are q3 : \n",q3)
        print("The Uppler limit point of the data is \n",ULP)
        print("The lower limit point of the data is \n",LLP)
        if df[x].min()>LLP and df[x].max()<ULP:
```

```
            print("The outliers are not present \n")

            print("------------------------------------------------------------------------------")

        else:

            print("The outliers are present \n")
            print("The outliers are :")
            print(df[df[x].values>ULP][x])
            print(df[df[x].values<LLP][x])
            print("------------------------------------------------------------------------------")









    else:

        print('\033[1m'+"The data is Qualitative \n"+'\033[0m')


        if df[x].nunique()==1:
            print('\033[1m'+"The data is singular \n"+'\033[0m')
            print("The mode is :",df[x].mode())
            print("The count of mode is \n",df[x].value_counts())
        elif df[x].nunique()==2:
            print('\033[1m'+"The data is Binary \n"+'\033[0m')
            print("The mode is :",df[x].mode())
            print("The count of mode is \n",df[x].value_counts())
        elif df[x].nunique()>2:
            print('\033[1m'+"The data is Multi \n"+'\033[0m')
            print("The mode is :",df[x].mode())
            print("The count of mode is \n",df[x].value_counts())

        print("------------------------------------------------------------------------------")

c=df.columns
for i in c:
    operations(df,i)
    print("\n")
```

```
 2.0
The quartiles are q2 :
 2.0
The quartiles are q3 :
 4.0
The Uppler limit point of the data is
 7.0
The lower limit point of the data is
 -1.0
The outliers are present

The outliers are :
30    8
Name: carb, dtype: int64
Series([], Name: carb, dtype: int64)
--------------------------------------------------------------------------------
```

```
def Summary():
        print('\033[1m'+"The Summary of data is  \n"+'\033[0m')
        print("The shape of the datset is :",df.shape)
        print("The sixe o the data set is :",df.size)
        print("The dimensions of the dataset are:",df.ndim)
        print("The memory usage of the data set are",df.memory_usage())
        print("The data types of the dataset are:",df.dtypes)
        print("--------------------------------------------------------------------------------")

Summary()
```

```
The Summary of data is

The shape of the datset is : (32, 12)
The sixe o the data set is : 384
The dimensions of the dataset are: 2
The memory usage of the data set are Index     128
C_name    256
mpg       256
cyl       256
disp      256
hp        256
drat      256
wt        256
qsec      256
vs        256
am        256
gear      256
carb      256
dtype: int64
The data types of the dataset are: C_name     object
mpg       float64
cyl         int64
disp      float64
hp          int64
drat      float64
wt        float64
qsec      float64
vs          int64
am          int64
gear        int64
carb        int64
dtype: object
--------------------------------------------------------------------------------
```

```
 def Column_Summary():
        print('\033[1m'+"The Column wise Summary of data is  \n"+'\033[0m')
        k=df.columns
        for i in k:
            print('\033[1m'+'', i, 'rows'+'\033[0m')
            print("The Shape of the column ",i,"is ",df[i].shape)
            print("The Size of the column ",i,"is ",df[i].size)
            print("The Dimensions of the column ",i,"is ",df[i].ndim)
            print("The Memory used by the column ",i,"is ",df[i].memory_usage())
            print("The Data types  of the column ",i,"is ",df[i].dtypes)
            print("--------------------------------------------------------------------------------")
Column_Summary()
```

```
The Shape of the column  drat is  (32,)
The Size of the column  drat is  32
The Dimensions of the column  drat is  1
The Memory used by the column  drat is  384
The Data types  of the column  drat is  float64
--------------------------------------------------------------------------------
 wt rows
The Shape of the column  wt is  (32,)
The Size of the column  wt is  32
The Dimensions of the column  wt is  1
The Memory used by the column  wt is  384
The Data types  of the column  wt is  float64
--------------------------------------------------------------------------------
 qsec rows
The Shape of the column  qsec is  (32,)
The Size of the column  qsec is  32
The Dimensions of the column  qsec is  1
The Memory used by the column  qsec is  384
The Data types  of the column  qsec is  float64
--------------------------------------------------------------------------------
 vs rows
The Shape of the column  vs is  (32,)
The Size of the column  vs is  32
The Dimensions of the column  vs is  1
The Memory used by the column  vs is  384
The Data types  of the column  vs is  int64
--------------------------------------------------------------------------------
 am rows
The Shape of the column  am is  (32,)
The Size of the column  am is  32
The Dimensions of the column  am is  1
The Memory used by the column  am is  384
The Data types  of the column  am is  int64
--------------------------------------------------------------------------------
 gear rows
The Shape of the column  gear is  (32,)
The Size of the column  gear is  32
The Dimensions of the column  gear is  1
The Memory used by the column  gear is  384
The Data types  of the column  gear is  int64
--------------------------------------------------------------------------------
 carb rows
The Shape of the column  carb is  (32,)
The Size of the column  carb is  32
The Dimensions of the column  carb is  1
The Memory used by the column  carb is  384
The Data types  of the column  carb is  int64
--------------------------------------------------------------------------------
```

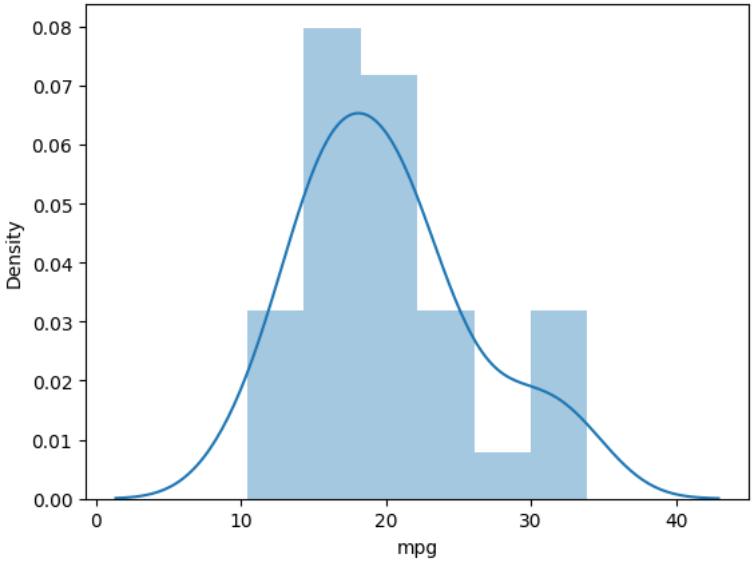
```
df.columns
```

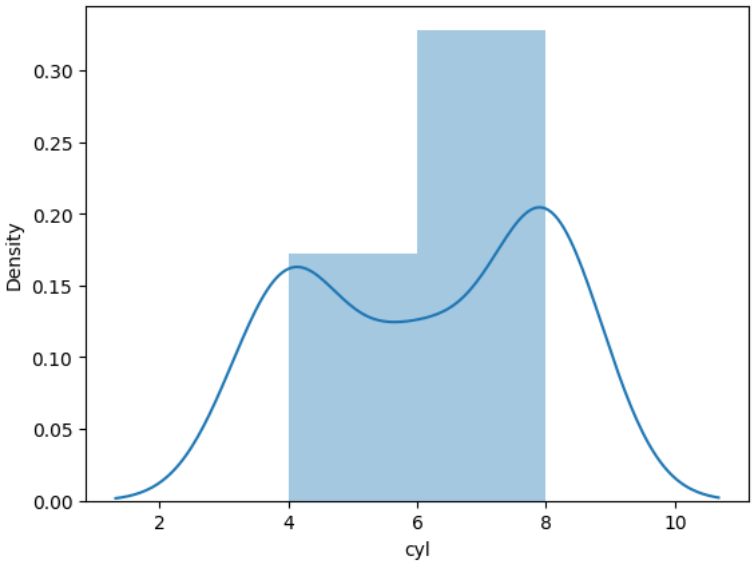
```
Index(['C_name', 'mpg', 'cyl', 'disp', 'hp', 'drat', 'wt', 'qsec', 'vs', 'am',
       'gear', 'carb'],
      dtype='object')
```

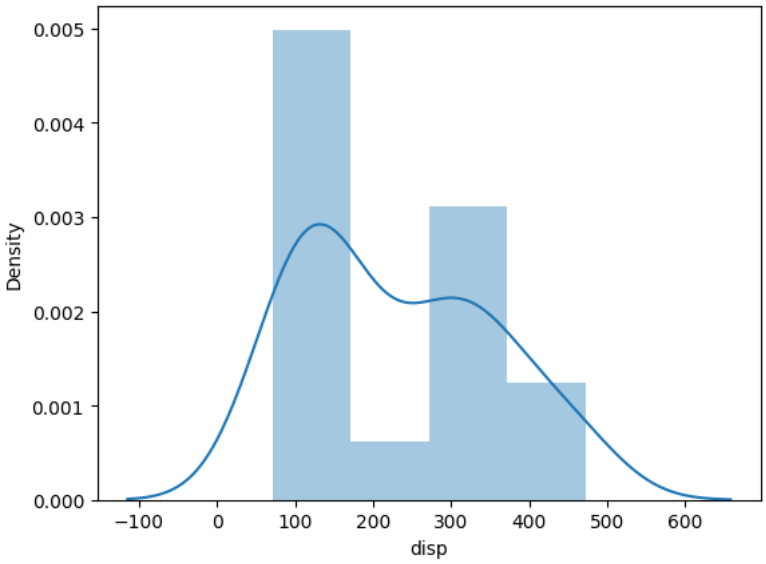
```
#taking only numerical columns in list x for plotting distribution plot
k=df.drop(['C_name'],axis=1)
```

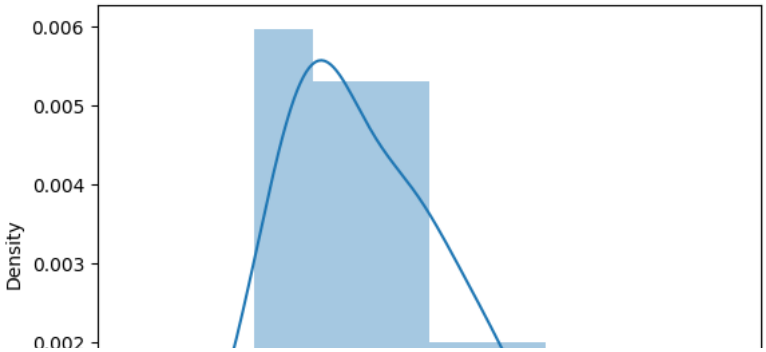
Data VISUALIZATION

```
for i in k.columns:
    sns.distplot(df[i],kde=True)
    plt.show()
```

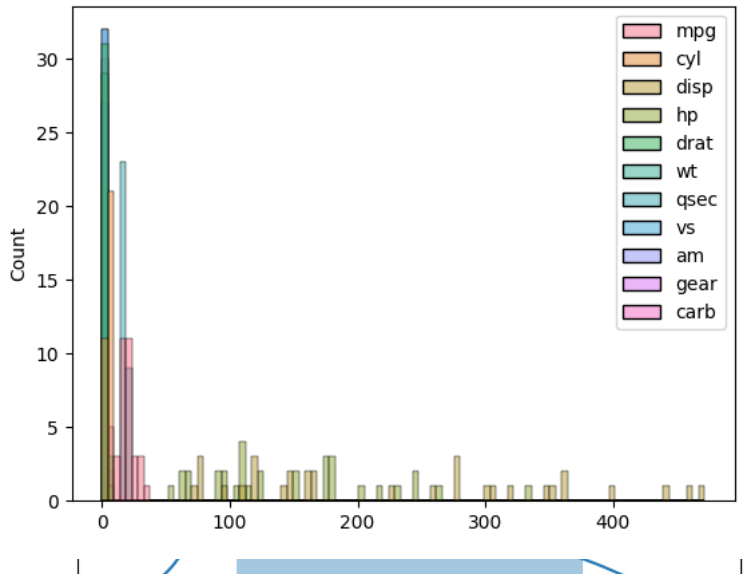

Density
mpg


Density
cyl


Density
disp


Density

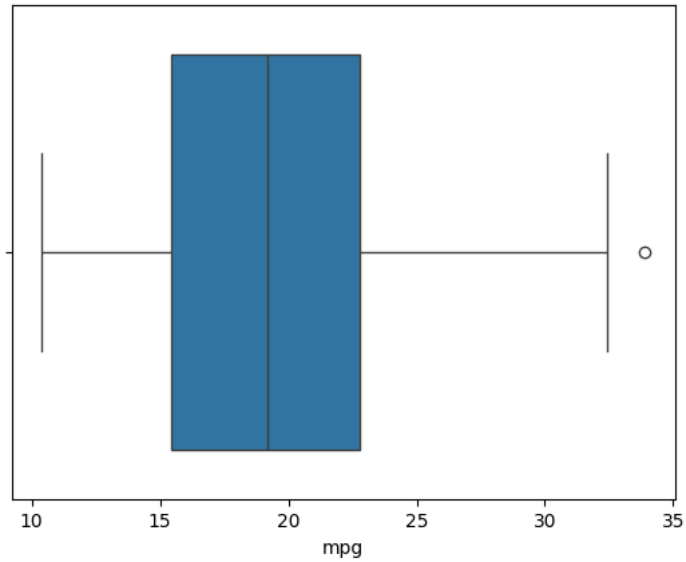
```
sns.histplot(data=k)
plt.show()
```

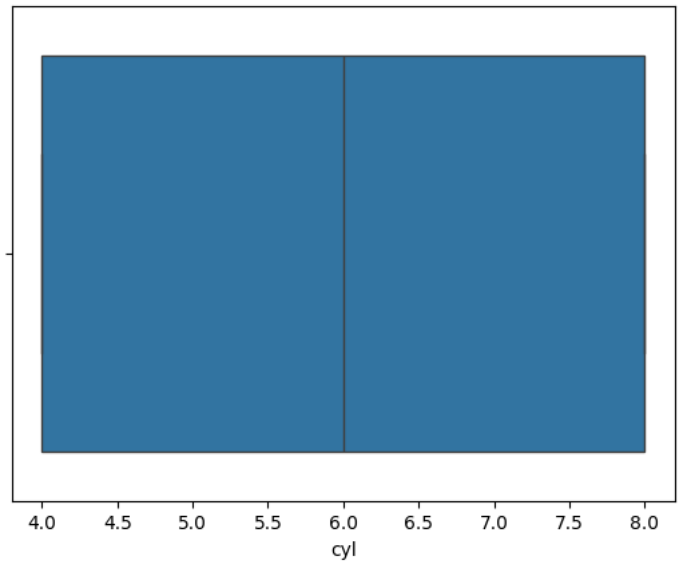


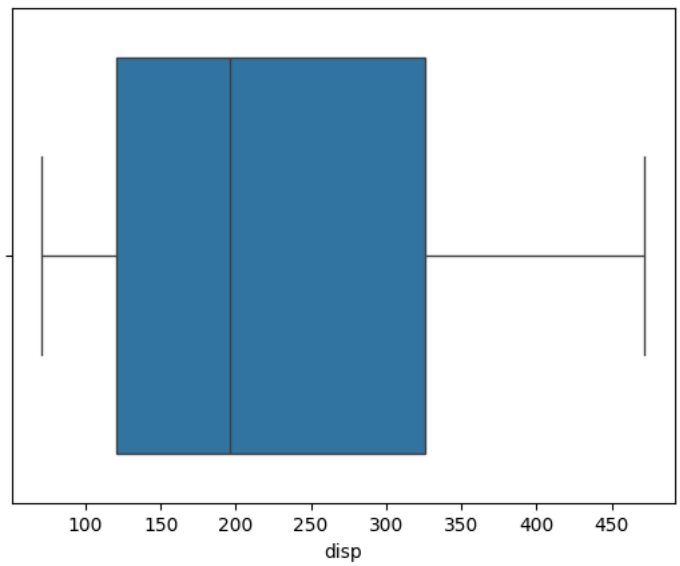
RELATION PLOTS

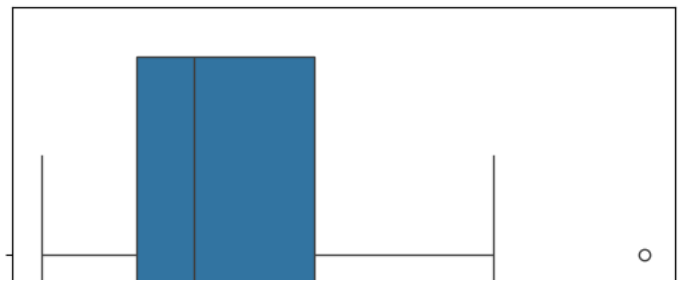
```
print(k.columns)
for i in k.columns:
    sns.boxplot(data=k,x=i)
    plt.show()
```

```
Index(['mpg', 'cyl', 'disp', 'hp', 'drat', 'wt', 'qsec', 'vs', 'am', 'gear',
       'carb'],
      dtype='object')
```

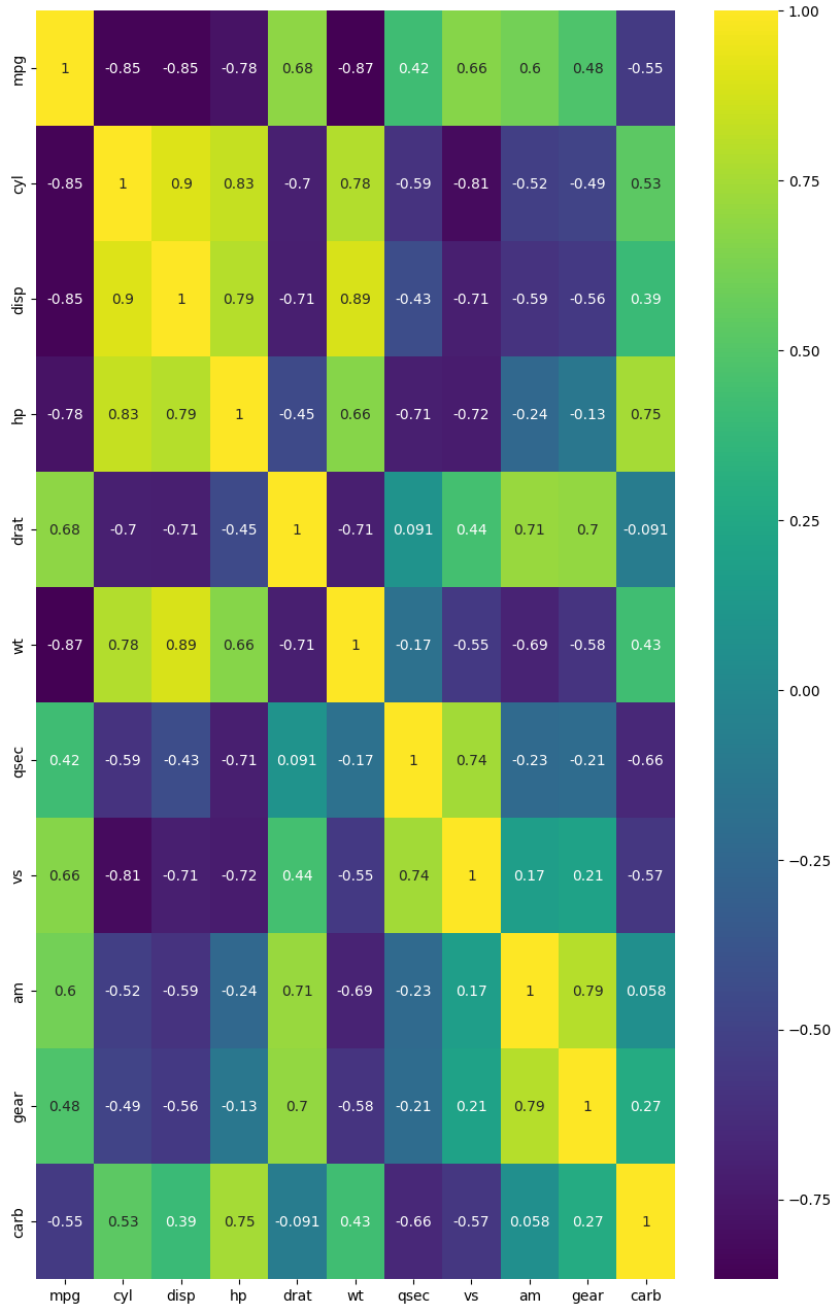






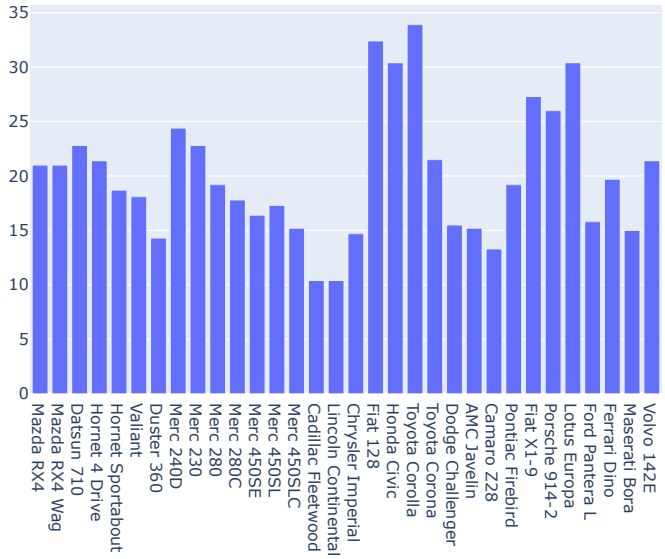


```
plt.figure(figsize=(10,16))
ax = sns.heatmap(df.corr(),annot = True, cmap = 'viridis')
plt.show()
```

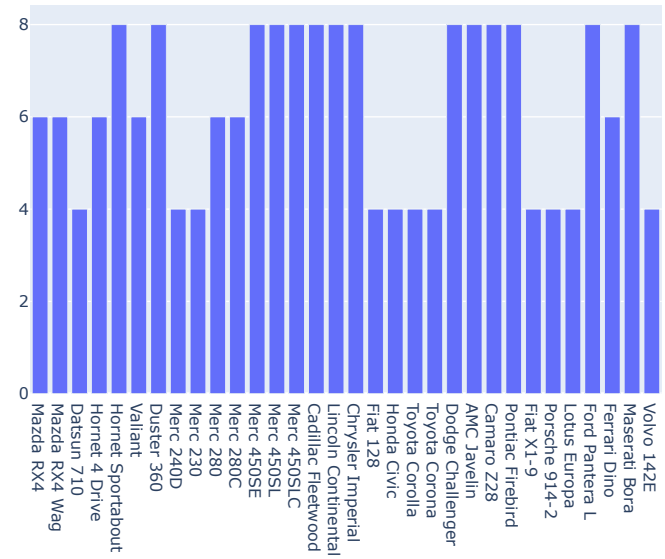



```
for i in k.columns:
    x= df['C_name']
    y= df[i]
    data = go.Bar(x= x,y= y)
    layout = go.Layout(title = 'CARS DATA')
    fig = go.Figure(data=data,layout=layout)
    fig.show()
```

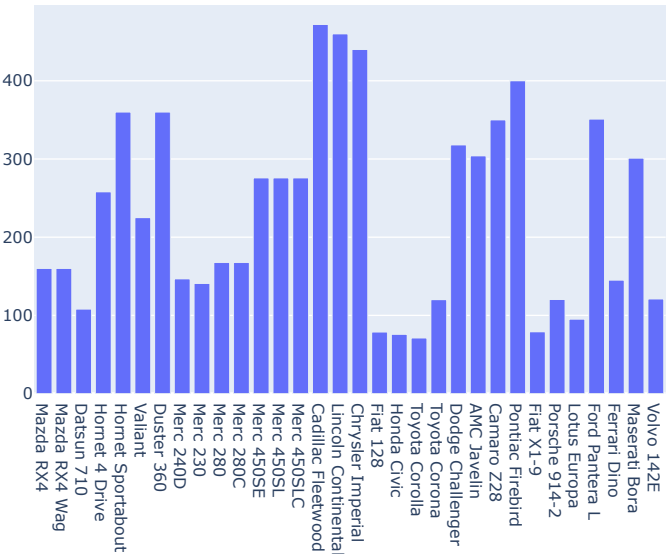
CARS DATA



CARS DATA



CARS DATA



- Toyota Corolla has more miles per gallon than any other car
- Hornet sportabout,Duster 360,Merc 450sl,Merc 450se,Merc 450sll,Cadillac fleetwood,Lincoln continental,Chrysler,Dodge Challenger,AMCJavellin,Camaro,Pontiac Firebird,Maserati Bora have same number of cylinders
- Cadilliac has more displacement than any other cars
- Maserati bora has more horespower than any other cars
- Honda civic has more rear axle ratio than any other cars
- Lincoln Continental has more weight than any other cars
- Merc 230 has best qsec performance than any other cars
- Maserati bora has more number of carburetors than any other cars

Data Preproccessing

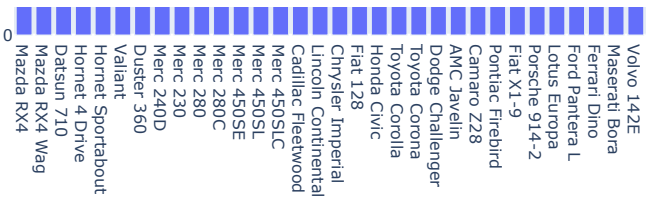
```
def LABEL_ENCODING(c1):
    from sklearn import preprocessing
    # label_encoder object knows how to understand word labels.
    label_encoder = preprocessing.LabelEncoder()

    # Encode labels in column 'species'.
    df[c1]= label_encoder.fit_transform(df[c1])

    df[c1].unique()
    return df
```

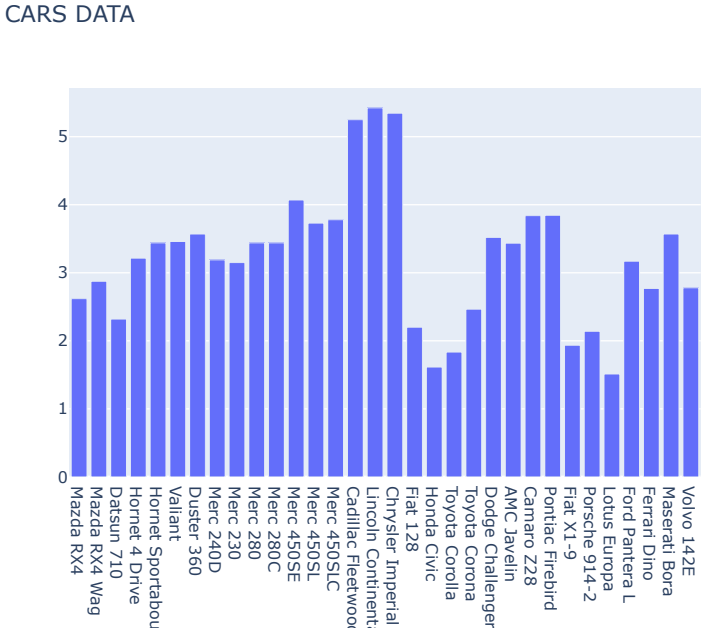
```
df.columns
```

```
Index(['C_name', 'mpg', 'cyl', 'disp', 'hp', 'drat', 'wt', 'qsec', 'vs', 'am',
       'gear', 'carb'],
      dtype='object')
```

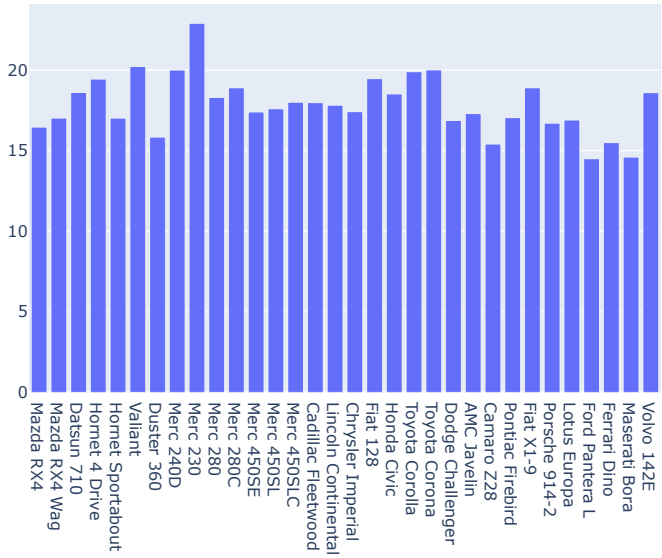
```
LABEL_ENCODING('C_name')
```

	C_name	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
0	17	21.0	6	160.0	110	3.90	2.620	16.46	0	1	4	4
1	18	21.0	6	160.0	110	3.90	2.875	17.02	0	1	4	4
2	4	22.8	4	108.0	93	3.85	2.320	18.61	1	1	4	1
3	12	21.4	6	258.0	110	3.08	3.215	19.44	1	0	3	1

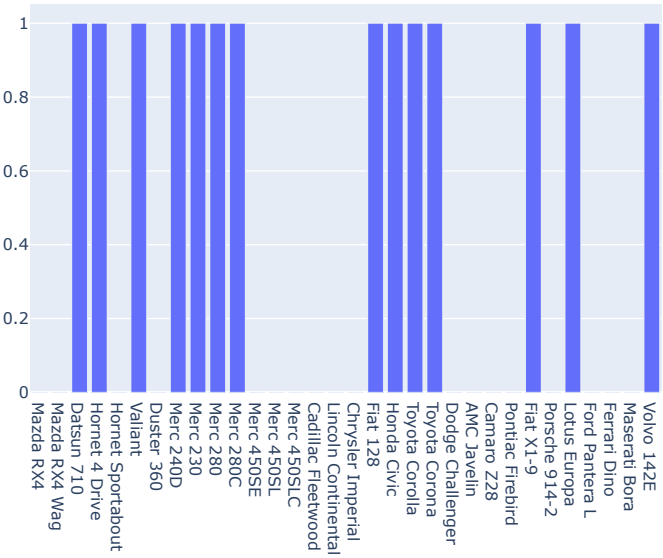




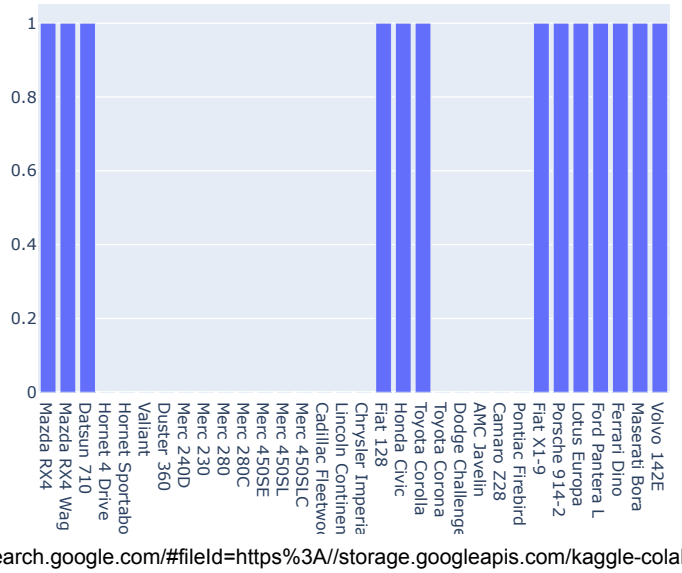
CARS DATA



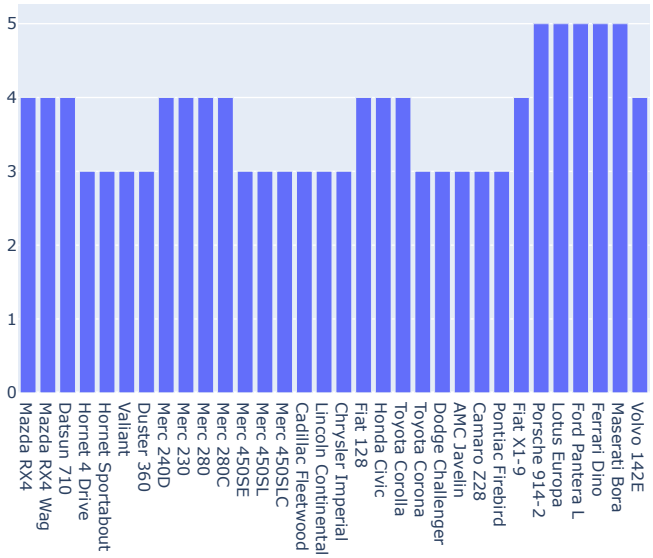
CARS DATA



CARS DATA



CARS DATA



CARS DATA