Program No:- 7

Aim:- Program to implement multiple regression technique using any standard dataset available in the public domain and evaluate its performance.

Program-1

Program Code

```
import  pandas
df = pandas.read_csv("cars.csv")
x = df[['Weight', 'Volume']]
y = df['CO2']
#splitting
from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.20,
random_state=0)
# feature scaling
from sklearn.preprocessing import StandardScaler
sc = StandardScaler()
x_train = sc.fit_transform(x_train)
x_test = sc.transform(x_test)
print(x_train)
print(x_test)
from sklearn import linear_model
regr = linear_model.LinearRegression()
regr.fit(x ,y)
predictedCO2 = regr.predict([[2300, 1300]])
```

```
print(predictedCO2)
from sklearn.metrics import accuracy_score
ac=accuracy_score(y_test,y_test)
print(ac)
```

Output

```
C:\Users\mca\PycharmProjectspython\data\venv\Scripts\python.exe C:/Users/mca/PycharmProjectspython/pythonProject1/reg.py
[[-1.25691019 -0.8002149 ]
 [ 1.92912957  1.04498651]
 [ 2.01824956  1.04498651]
 [ 0.54776967  2.36298752]
 [ 0.52548968 -0.00941429]
 [ 1.11813763 -0.00941429]
 [-0.16519027 -0.00941429]
 [-0.71327823 -0.27301449]
 [-0.08943828 -0.00941429]
 [-1.52872617 -1.5910155 ]
 [ 0.03532971  1.57218691]
 [ 0.2403057  -0.00941429]
 [ 0.41408968 -0.27301449]
 [ 0.97108964  1.04498651]
```

Program-2

Program Code

```
import pandas
df = pandas.read_csv("cars.csv")
X = df[['Weight', 'Volume']]
y = df['CO2']
from sklearn import linear_model
regr = linear_model.LinearRegression()
regr.fit(X,y)
predictedCO2 = regr.predict([[2300, 1300]])
print(predictedCO2)
```

Output

```
C:\Users\mca\PycharmProjectspython\data\venv\Scripts\python.exe C:/Users/mca/PycharmProjectspython/pythonProject1/mullinear.py
[107.2087328]
```

Program-3

Aim:-Variance and Coefficient

Program Code

```
import matplotlib.pyplot as plt
#import numpy as np
from sklearn import datasets, linear_model, metrics
boston = datasets.load_boston(return_X_y=False)
X = boston.data
y = boston.target
from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.4, random_state=1)
reg = linear_model.LinearRegression()
reg.fit(X_train, y_train)
print('Coefficients: ', reg.coef_)
print('Variance score: {}'.format(reg.score(X_test, y_test)))
```

Output

```
C:\Users\mca\PycharmProjectspython\data\venv\Scripts\python.exe C:/Users/mca/PycharmProjectspython/pythonProject1/mul2.py
Coefficients:  [-8.95714048e-02  6.73132853e-02  5.04649248e-02  2.18579583e+00
 -1.72053975e+01  3.63606995e+00  2.05579939e-03 -1.36602886e+00
  2.89576718e-01 -1.22700072e-02 -8.34881849e-01  9.40360790e-03
 -5.04008320e-01]
Variance score: 0.7209056672661767
```