```
In [1]: import pandas as pd
        df=pd.read_csv("D:\data1.csv")
        df.head(20)
```

Out[1]:

	Car	Model	Volume	Weight	CO2
0	Toyoty	Aygo	1000	790	99
1	Mitsubishi	Space Star	1200	1160	95
2	Skoda	Citigo	1000	929	95
3	Fiat	500	900	865	90
4	Mini	Cooper	1500	1140	105
5	VW	Up!	1000	929	105
6	Skoda	Fabia	1400	1109	90
7	Mercedes	A-Class	1500	1365	92
8	Ford	Fiesta	1500	1112	98
9	Audi	A1	1600	1150	99
10	Hyundai	I20	1100	980	99
11	Suzuki	Swift	1300	990	101
12	Ford	Fiesta	1000	1112	99
13	Honda	Civic	1600	1252	94
14	Hundai	I30	1600	1326	97
15	Opel	Astra	1600	1330	97
16	BMW	1	1600	1365	99
17	Mazda	3	2200	1280	104
18	Skoda	Rapid	1600	1119	104
19	Ford	Focus	2000	1328	105

```
In [2]: df.shape
```

Out[2]: (36, 5)

```
In [3]: df.describe()
```

Out[3]:

	Volume	Weight	CO2
count	36.000000	36.000000	36.000000
mean	1611.111111	1292.277778	102.027778
std	388.975047	242.123889	7.454571
min	900.000000	790.000000	90.000000
25%	1475.000000	1117.250000	97.750000
50%	1600.000000	1329.000000	99.000000
75%	2000.000000	1418.250000	105.000000
max	2500.000000	1746.000000	120.000000

```
In [4]: X=df[['Weight','Volume']]
        X.head()
```

Out[4]:

	Weight	Volume
0	790	1000
1	1160	1200
2	929	1000
3	865	900
4	1140	1500

```
In [5]:  y=df['CO2']
         y.head()
```

```
Out[5]:  0      99
         1      95
         2      95
         3      90
         4     105
         Name: CO2, dtype: int64
```

```
In [6]:  from sklearn import linear_model
         regr=linear_model.LinearRegression()
         regr.fit(X,y)
```

```
Out[6]:  ▾ LinearRegression

         LinearRegression()
```

predict the CO2 emission of a car where the weight is 2100kg, and the volume is 1100cm3:

```
In [7]:  predictedCO2=regr.predict([[2100,1100]])
         print(predictedCO2)
```

```
[104.13749184]

C:\Users\kumar\anaconda3\lib\site-packages\sklearn\base.py:420: UserWarning: X does not have valid feature n
ames, but LinearRegression was fitted with feature names
  warnings.warn(
```

REMOVE WARNING

```
In [8]: import warnings
        warnings.filterwarnings('ignore')
```

coefficient values of the regression object:

```
In [9]: print(regr.coef_)
```

```
[0.00755095 0.00780526]
```

Explaination of coefficient values of the regression object

```
array represents the coefficient values of weight and volume.

Weight: 0.00755095
Volume: 0.00780526

These values tell us that if the weight increase by 1000kg, the CO2 emission increases by
0.00755095g*1000=7.55095g.

And if the engine size (Volume) increases by 1000cm3, the CO2 emission increases by 0.00780526
g*1000=7.80526g.
```

predict the CO2 emission of a car where the weight is 3100kg, and the volume is 1100cm3:

```
In [11]: predictedCO2=regr.predict([[3100,1100]])
```

```
In [12]: print(predictedCO2)
```

```
[111.68843911]
```

Predict the CO2 emission of a car where the weight is 3100kg, and the volume is 2100cm3. here emission of co2 is increase by 7.80526g

In [13]:
```python
predictedCO2=regr.predict([[3100,2100]])
print(predictedCO2)
```

[119.49369664]

In [ ]: