Program No:7

Program to implement linear regression techniques using built in function and plot the values.

Program:

```
import matplotlib.pyplot as plt
import numpy as np
from sklearn.linear_model import LinearRegression
x=np.array([5,10,15,20,25]).reshape((-1,1))
y=np.array([12,14,16,18,22])
print(x)
print(y)
model=LinearRegression()
model.fit(x,y)
r_sq=model.score(x,y)
print('coefficient of determination:', r_sq)
print('intercept:', model.intercept_)
print('slope:', model.coef_)
y_pred=model.predict(x)
print('predicted response:' ,y_pred)
plt.scatter(x,y, color="m" ,marker ="o" ,s=50)
plt.plot(x,y_pred, color="g")
plt.xlabel('x')
plt.ylabel('y')
plt.show()
```

Output

```
C:\Users\ajcemca\AppData\Local\Programs\Python\Python39\python.exe C:/Users/a
[[ 5]
 [10]
 [15]
 [20]
 [25]]
[12 14 16 18 22]
coefficient of determination: 0.972972972972973
intercept: 9.199999999999998
slope: [0.48]
predicted response: [11.6 14.  16.4 18.8 21.2]

Process finished with exit code 0
```

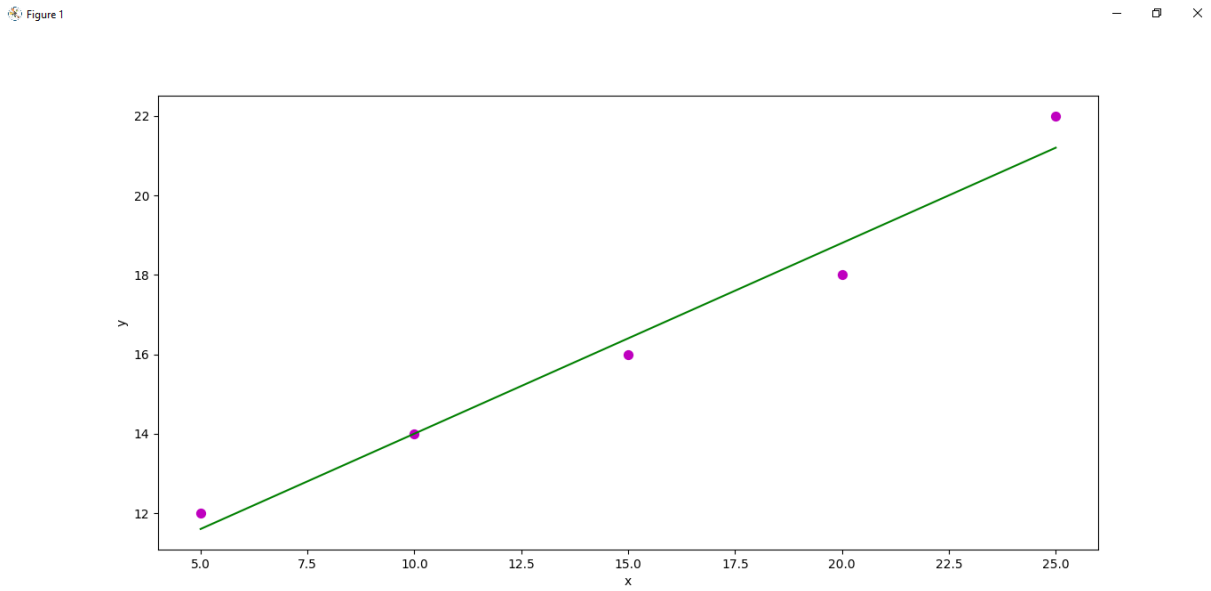
Figure 1
22
20
18
16
14
12
y
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
25.0
x