Ex_1_Linear_Regression_using_Least_Square_Method

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```python
import numpy as np
import matplotlib.pyplot as plt
```

```python
#Input array - X and Y
x=np.array(eval(input()))
```

```
[8,2,11,6,5,4,12,9,6,1]
```

```python
y=np.array(eval(input()))
```

```
[3,10,3,6,8,12,1,4,9,14]
```

```python
#Mean Extraction
x_mean=np.mean(x)
y_mean=np.mean(y)
```

```python
#formula Implementation
num, denom = 0, 0

for i in range(len(x)):
  num += ((x[i] - x_mean) * (y[i] - y_mean))
  denom += (x[i] - x_mean)**2

m = num/denom
b = y_mean - m * x_mean

print(m, b)
```
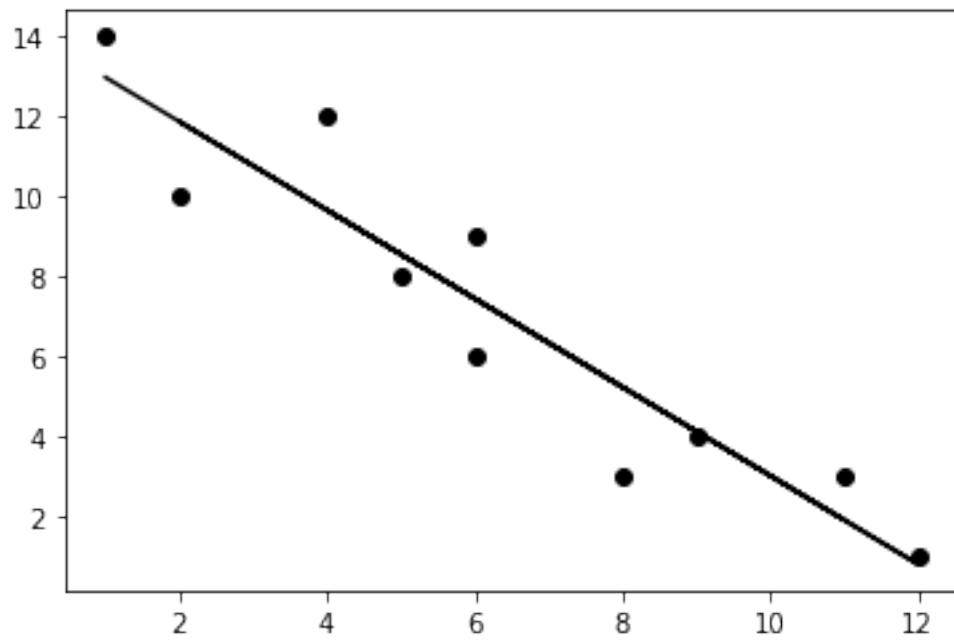
```
-1.1064189189189189 14.08108108108108
```

```python
y_predicted=m*x+b
y_predicted
```

```
array([ 5.22972973, 11.86824324,  1.91047297,  7.44256757,  8.54898649,
        9.65540541,  0.80405405,  4.12331081,  7.44256757, 12.97466216])
```

```python
plt.scatter(x,y,color='black')
plt.plot(x, y_predicted,color='black')
```

```
plt.show()
```



```
[ ]: print(m*3+b)
```

10.761824324324325