Manual computation of Simple Linear Regression without using any inbuilt functions

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# For the given x and y, computing a and b

x = [0, 1, 2, 3, 4]
y = [2, 3, 5, 4, 6]
a = ((len(x) * sum(i * j for i, j in zip(x, y)))- (sum(i for i in x) * sum(i for i in y))) / (len(x) * sum(i**2 for i in x)- (sum(i for i in x
a
b = (sum(i for i in y)- (a*(sum(i for i in x)))) / len(x)
b

# Now substituting the values of a and b in regression line equation

print( "The least square regression line is y=",a, "x+",b )
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The least square regression line is y= 0.9 x+ 2.2
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# For the given value of X, finding the value of y

X= 10
ax= a*X
print("If X=",X,"then Y =",ax+b)
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If X= 10 then Y = 11.2
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```
# Defining a function for the computation of Simple linear regression

def linearreg(x,y,X):

      # Taking values of x and y as input from user
      xip = input("Enter x separated by commas: ")
      x = [int(x) for x in xip.split(',')]
      xip = input("Enter y separated by commas: ")
      y = [int(x) for x in xip.split(',')]

      # Checking if the length of x and y are equal
      if len(x)!=len(y):
        print("Invalid Input: Length of x and y must be equal")
        return

      # If equal, Compute the equation of linear regression
      X = int(input("Enter X: "))
      a = ((len(x) * sum(i * j for i, j in zip(x, y)))- (sum(i for i in x) * sum(i for i in y))) / (len(x) * sum(i**2 for i in x)- (sum(i for
      a
      b = (sum(i for i in y)- (a*(sum(i for i in x)))) / len(x)
      b
      print( "The least square regression line is y=",a, "x+",b )

      # The value of Y for the given X
      ax= a*X
      print("If X=",X,"then Y =",ax+b)

linearreg(x,y,X)
```

```
Enter x separated by commas: 0,1,2,3,4
Enter y separated by commas: 2,3,5,4,6
Enter X: 10
The least square regression line is y= 0.9 x+ 2.2
If X= 10 then Y = 11.2
```