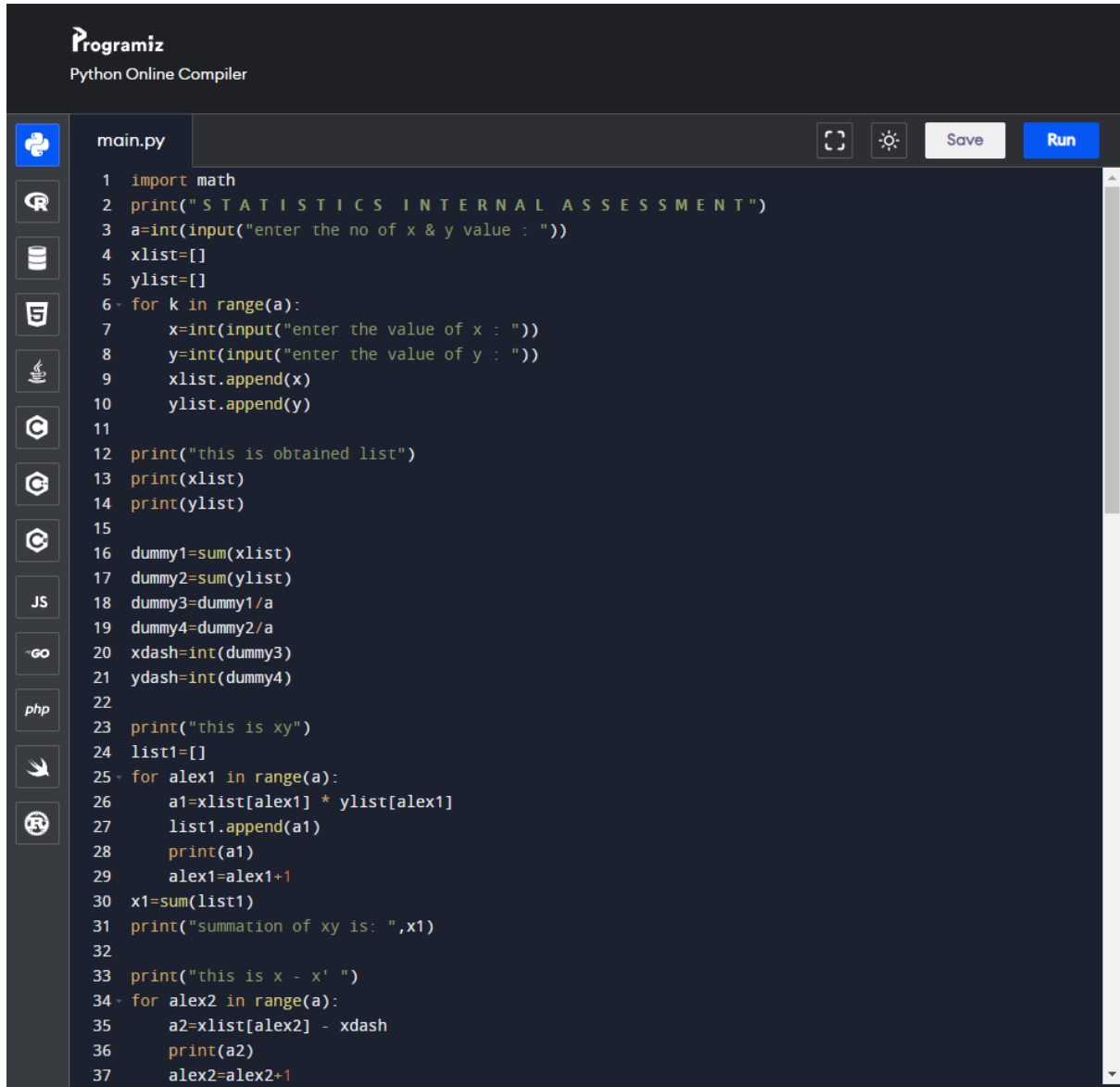


Custom Implementation of Pearson Correlation Coefficient in Python



The image shows a screenshot of the Programiz Python Online Compiler interface. The title bar at the top reads "Programiz Python Online Compiler". Below the title bar, there is a sidebar on the left with icons for various programming languages: Python (selected), R, Java, C++, JavaScript, Go, PHP, and others. The main area displays a Python script named "main.py". The script implements a custom Pearson Correlation Coefficient calculation. It starts by importing the math module and printing a title "STATISTICS INTERNAL ASSESSMENT". It then prompts the user to enter the number of x and y values (a). Two empty lists, xlist and ylist, are initialized. A for loop iterates from 0 to a-1, prompting the user to enter values for x and y, which are then appended to xlist and ylist respectively. After the loop, the lists are printed. Calculations for the sum of x (dummy1), sum of y (dummy2), sum of x squared (dummy3), and sum of y squared (dummy4) are performed. These are used to calculate xdash (sum of x / a) and ydash (sum of y / a). A new list, list1, is initialized, and another for loop iterates from 0 to a-1, calculating the product of corresponding x and y values (a1 = xlist[alex1] * ylist[alex1]) and appending it to list1. The sum of list1 (x1) is calculated and printed as the "summation of xy". Finally, the script prints "this is x - x'" and enters another for loop to calculate the deviation of each x value from the mean (a2 = xlist[alex2] - xdash) and prints it.

```
1 import math
2 print("STATISTICS INTERNAL ASSESSMENT")
3 a=int(input("enter the no of x & y value : "))
4 xlist=[]
5 ylist=[]
6 for k in range(a):
7     x=int(input("enter the value of x : "))
8     y=int(input("enter the value of y : "))
9     xlist.append(x)
10    ylist.append(y)
11
12 print("this is obtained list")
13 print(xlist)
14 print(ylist)
15
16 dummy1=sum(xlist)
17 dummy2=sum(ylist)
18 dummy3=dummy1/a
19 dummy4=dummy2/a
20 xdash=int(dummy3)
21 ydash=int(dummy4)
22
23 print("this is xy")
24 list1=[]
25 for alex1 in range(a):
26     a1=xlist[alex1] * ylist[alex1]
27     list1.append(a1)
28     print(a1)
29     alex1=alex1+1
30 x1=sum(list1)
31 print("summation of xy is: ",x1)
32
33 print("this is x - x' ")
34 for alex2 in range(a):
35     a2=xlist[alex2] - xdash
36     print(a2)
37     alex2=alex2+1
```

```

39 print("this is y - y' ")
40 for alex3 in range(a):
41     a3=ylist[alex3] - ydash
42     print(a3)
43     alex3=alex3+1
44
45 print("this is x2 ")
46 list3=[]
47 for alex4 in xlist:
48     a12=alex4**2
49     list3.append(a12)
50     print(a12)
51 x3=sum(list3)
52
53 print("this is y2 ")
54 list4=[]
55 for alex5 in ylist:
56     a13=alex5**2
57     list4.append(a13)
58     print(a13)
59 x4=sum(list4)
60
61 print("this is (x-x' * y-y') ")
62 list2=[]
63 for alex6 in range(a):
64     a6=(xlist[alex6] - xdash) * (ylist[alex6] - ydash)
65     list2.append(a6)
66     print(a6)
67     alex6=alex6+1
68 x2=sum(list2)
69
70 dummy5=1 / a
71 dummy6=dummy5 * x2
72 print("coefficient of x,y is :",int(dummy6))
73
74 dummy7= xdash**2

```

```

75 dummy8= ydash**2
76 dummy9= dummy5 * x3 * dummy7
77 dummy10=dummy5 * x4 * dummy8
78 print("standard deviation of x is :",math.sqrt(dummy9))
79 print("standard deviation of y is :",math.sqrt(dummy10))
80
81 final1=dummy9 * dummy10
82 final2=dummy6/final1
83 final3=int(final2)
84 print("karl peterson correlation coefficient is :",final3)
85
86 if final3 == 0:
87     print("U N C O R R E L A T I O N")
88 elif final3>0:
89     print("P O S I T I V E C O R R E L A T I O N")
90 else:
91     print("N E G A T I V E C O R R E L A T I O N")
92

```

```
Shell Clear
STATISTICS INTERNAL ASSESSMENT
enter the no of x & y value : 5
enter the value of x : 2
enter the value of y : 3
enter the value of x : 2
enter the value of y : 4
enter the value of x : 2
enter the value of y : 5
enter the value of x : 2
enter the value of y : 6
enter the value of x : 2
enter the value of y : 7
this is obtained list
[2, 2, 2, 2, 2]
[3, 4, 5, 6, 7]
this is xy
6
8
10
12
14
summation of xy is: 50
this is x - x'
0
0
0
0
0
this is y - y'
-2
-1
0
1
2
```

```
this is x2
4
4
4
4
4
this is y2
9
16
25
36
49
this is (x-x' * y-y')
0
0
0
0
0
coefficient of x,y is : 0
standard deviation of x is : 4.0
standard deviation of y is : 25.98076211353316
karl peterson correlation coefficient is : 0
UNCORRELATION
>
```