

## 1. Flowcart

The screenshot displays a Python IDE with a dark theme. The main editor window contains a Python function named `Flowchart` that takes three arguments `a`, `b`, and `c`. The function uses a series of nested `if` and `else` statements to print different combinations of the input values based on their relative magnitudes. The function returns the final printed result.

```
1 # 1. Flowchart
2
3
4 def Print_values(a,b,c):
5     if a>b:
6         if b>c:
7             result = print(a,b,c)
8         else:
9             if a>c:
10                result = print(a,c,b)
11            else:
12                result = print("Not")
13        else:
14            if b>c:
15                if a>c:
16                    result = print(b,a,c)
17                else:
18                    if b>c:
19                        result = print(b,c,a)
20                    else:
21                        result = print(c,b,a)
22            else:
23                result = print(c,b,a)
24        return result
25
```

The bottom right of the IDE shows the 'Console' output, which displays the results of the function calls: `In [56]: Print_values(1,2,3)` outputs `3 2 1`, `In [57]: Print_values(1,3,2)` outputs `3 2 1`, `In [58]: Print_values(3,1,2)` outputs `3 2 1`, and `In [59]: Print_values(3,2,1)` outputs `3 2 1`. The `In [60]:` prompt is visible at the bottom.

	NaN	Type	Size	Value
a	1	int	1	
b	1	int	2	
c	1	int	3	

## 2 . Matrix multiplication

Spidee (Python 3.9)

File Edit Search Source Run Debug Console Projects Tools View Help

C:\Users\Potato\Desktop\PSL\_2.py

```
1 # -*- coding: utf-8 -*-
2
3
4 # 2.Matrix multiplication
5
6 import numpy as np
7 M1 = np.random.randint(0,50,(5,10))
8 # 2
9 M2 = np.random.randint(0,50,(10,5))
10
11 def Matrix_multip(m1,m2):
12     list1 = []
13     res = []
14     for i in range(0, len(m1[:,0])):
15         A = M1[i,:]
16         for j in range(0, len(m2[0,:])):
17             B = M2[:,j]
18             C = A*B
19             D = sum(C[0])
20             list1.append(D)
21         a = np.asarray(list1).reshape(1,-1)
22         res.append(a[0])
23     list1 = []
24     res = np.asarray(res)
25     print(res)
26     return
27
28 if __name__ == '__main__':
29     res=Matrix_multip(M1, M2)
```

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M1 - Numpy object array

0	1	2	3	4	5	6	7	8	9
1	4	39	27	36	37	36	15	22	35
2	41	49	13	23	11	17	12	33	20
3	13	5	0	46	27	37	26	35	
4	41	41	6	23	39	33	24	11	23

M2 - Numpy object array

0	46	2	1	2	3	4
1	9	27	43	38	26	
2	26	45	3	28	45	
3	1	6	11	12	36	
4	4	20	46	26	23	
5	47	37	29	29	35	
6	42	0	46	16	35	
7	18	41	20	27	9	
8	49	16	45	34	10	
9	45	48	35	20	45	

Format: Resize Background color

Format: Resize Background color Save and Close

Console I/O x

```
In [65]:
Removing all variables...

In [66]: runfile('C:/Users/Potato/Desktop/PSL_2.py', wdir='C:/Users/Potato/Desktop')
[[7230 6828 7261 6271 8439]
 [7257 6780 7385 6164 7854]
 [6660 4555 6058 6590 6650]
 [6419 5693 7824 6037 7152]
 [7953 5862 8584 7742 8681]]

In [67]:
```

Python console History

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### 3. Pascal triangle

Pascal\_triangle(100)



[illegible]

Toal\_solutions

Tool solutions - List (100 elements)

Index	Type	Size	Value
0	List	26	["12-34-5-6-7-8-9-1", "1-2-34-56-7-8-9-1", "1-2-3-4-5-6-7-8-9-1", "1-2 ...
1	List	11	["12-3-4-5-6-7-8-9-2", "12-34-5-6-7-8-9-2", "123-4-56-78-9-2", "12-3 ...
2	List	18	["12-34-5-6-7-8-9-3", "1-234-5-6-7-8-9-3", "1-2-3-4-5-6-7-8-9-3", "1- ...
3	List	8	["1-2-34-5-6-7-8-9-4", "12-3-4-5-6-7-8-9-4", "12-34-5-6-7-8-9-4", "12-3 ...
4	List	21	["1-234-5-6-7-8-9-5", "1-2-3-4-5-6-7-8-9-5", "1-2-34-5-6-7-8-9-5", "1- ...
5	List	12	["12-3-4-5-6-7-8-9-6", "12-34-5-6-7-8-9-6", "1234-5-6-7-8-9-6", "12-3 ...
6	List	17	["1-234-5-6-7-8-9-7", "1-2-3-4-5-6-7-8-9-7", "1-2-3-4-5-6-7-8-9-7", " ...
7	List	8	["12-3-4-5-6-7-8-9-8", "12-34-5-6-7-8-9-8", "12-34-5-6-7-8-9-8", "12 ...
8	List	22	["1-23-4-5-6-7-8-9-9", "1-23-4-5-6-7-8-9-9", "1-2-3-4-5-6-7-8-9-9", "1- ...
9	List	12	["12-3-4-5-6-7-8-9-10", "12-34-5-6-7-8-9-10", "12-34-5-6-7-8-9-10", "1 ...
10	List	21	["1-2-3-4-5-6-7-8-9-11", "1-2-34-5-6-7-8-9-11", "1-2-3-4-5-6-7-8-9-11 ...
11	List	11	["12-3-4-5-6-7-8-9-12", "12-3-4-5-6-7-8-9-12", "12-34-5-6-7-8-9-12", ...
12	List	16	["12-34-5-6-7-8-9-13", "1-2-34-5-6-7-8-9-13", "1-2-3-4-5-6-7-8-9-13", ...
13	List	15	["12-34-5-6-7-8-9-14", "12-3-4-5-6-7-8-9-14", "12-3-4-5-6-7-8-9-14", "1 ...
14	List	20	["1-2-3-4-5-6-7-8-9-15", "1-2-3-4-5-6-7-8-9-15", "1-2-34-5-6-7-8-9-15 ...
15	List	8	["12-3-4-5-6-7-8-9-16", "12-34-5-6-7-8-9-16", "12-34-5-6-7-8-9-16", ...
16	List	17	["1-234-5-6-7-8-9-17", "1-2-3-4-5-6-7-8-9-17", "1-2-34-5-6-7-8-9-17", ...
17	List	11	["12-3-4-5-6-7-8-9-18", "12-34-5-6-7-8-9-18", "12-3-4-5-6-7-8-9-18", ...
18	List	20	["1-2-3-4-5-6-7-8-9-19", "1-2-34-5-6-7-8-9-19", "1-2-3-4-5-6-7-8-9-19 ...
19	List	15	["12-3-4-5-6-7-8-9-20", "12-34-5-6-7-8-9-20", "12-34-5-6-7-8-9-20", ...
20	List	16	["1-2-3-4-5-6-7-8-9-21", "1-2-3-4-5-6-7-8-9-21", "1-2-34-5-6-7-8-9-21 ...
21	List	11	["12-3-4-5-6-7-8-9-22", "12-34-5-6-7-8-9-22", "12-3-4-5-6-7-8-9-22", ...
22	List	23	["1-2-3-4-5-6-7-8-9-23", "1-2-34-5-6-7-8-9-23", "1-2-34-5-6-7-8-9-23 ...
23	List	18	["12-3-4-5-6-7-8-9-24", "12-34-5-6-7-8-9-24", "12-3-4-5-6-7-8-9-24", ...
24	List	13	["1-2-34-5-6-7-8-9-25", "1-2-3-4-5-6-7-8-9-25", "1-2-34-5-6-7-8-9-25 ...
25	List	14	["12-34-5-6-7-8-9-26", "12-3-4-5-6-7-8-9-26", "12-34-5-6-7-8-9-26", ...
26	List	21	["1-2-3-4-5-6-7-8-9-27", "1-2-3-4-5-6-7-8-9-27", "1-2-34-5-6-7-8-9-27 ...
27	List	15	["12-3-4-5-6-7-8-9-28", "12-34-5-6-7-8-9-28", "12-3-4-5-6-7-8-9-28", "12 ...
28	List	19	["1-2-34-5-6-7-8-9-29", "1-2-34-5-6-7-8-9-29", "1-2-3-4-5-6-7-8-9-29", ...
29	List	17	["12-3-4-5-6-7-8-9-30", "12-34-5-6-7-8-9-30", "12-3-4-5-6-7-8-9-30", ...
30	List	14	["1-2-3-4-5-6-7-8-9-31", "1-2-3-4-5-6-7-8-9-31", "1-2-34-5-6-7-8-9-31 ...

Save and Close

Close

Tool solutions - list (100 elements)

Index	Type	Size	Value
31	list	19	['12-34-5-6-7-8-9=32', '12-3-4-5-6-7-8-9=32', '1-2-34-5-6-7-8-9=32', '...']
32	list	19	['1-2-3-4-5-6-7-8-9=33', '1-2-3-4-5-6-7-8-9=33', '1-2-3-4-5-6-7-8-9=33', '...']
33	list	7	['12-3-4-5-6-7-8-9=34', '12-3-4-5-6-7-8-9=34', '1-2-34-5-6-7-8-9=34', '...']
34	list	14	['1-2-3-4-5-6-7-8-9=35', '1-2-3-4-5-6-7-8-9=35', '1-2-34-5-6-7-8-9=35', '...']
35	list	19	['12-3-4-5-6-7-8-9=36', '12-3-4-5-6-7-8-9=36', '1-2-34-5-6-7-8-9=36', '...']
36	list	19	['1-2-3-4-5-6-7-8-9=37', '1-2-34-5-6-7-8-9=37', '1-2-34-5-6-7-8-9=37', '...']
37	list	17	['12-3-4-5-6-7-8-9=38', '12-3-4-5-6-7-8-9=38', '1-2-3-4-5-6-7-8-9=38', '...']
38	list	18	['1-2-3-4-5-6-7-8-9=39', '1-2-3-4-5-6-7-8-9=39', '1-2-34-5-6-7-8-9=39', '...']
39	list	16	['12-3-4-5-6-7-8-9=40', '12-3-4-5-6-7-8-9=40', '1-2-3-4-5-6-7-8-9=40', '...']
40	list	17	['1-2-3-4-5-6-7-8-9=41', '1-2-34-5-6-7-8-9=41', '1-2-34-5-6-7-8-9=41', '...']
41	list	18	['12-3-4-5-6-7-8-9=42', '1-2-34-5-6-7-8-9=42', '1-2-34-5-6-7-8-9=42', '...']
42	list	10	['1-2-3-4-5-6-7-8-9=43', '12-34-5-6-7-8-9=43', '1-2-34-5-6-7-8-9=43', '...']
43	list	15	['12-3-4-5-6-7-8-9=44', '1-2-34-5-6-7-8-9=44', '12-34-5-6-7-8-9=44', '1...']
44	list	26	['1-2-3-4-5-6-7-8-9=45', '1-2-3-4-5-6-7-8-9=45', '1-2-34-5-6-7-8-9=45', '...']
45	list	18	['12-3-4-5-6-7-8-9=46', '1-2-34-5-6-7-8-9=46', '1-2-34-5-6-7-8-9=46', '...']
46	list	15	['1-2-3-4-5-6-7-8-9=47', '1-2-34-5-6-7-8-9=47', '1-2-34-5-6-7-8-9=47', '...']
47	list	16	['12-3-4-5-6-7-8-9=48', '1-2-34-5-6-7-8-9=48', '1-2-34-5-6-7-8-9=48', '...']
48	list	12	['1-2-34-5-6-7-8-9=49', '1-2-34-5-6-7-8-9=49', '1-2-34-5-6-7-8-9=49', '...']
49	list	17	['1-2-34-5-6-7-8-9=50', '1-2-34-5-6-7-8-9=50', '1-2-3-4-5-6-7-8-9=50', '...']
50	list	19	['1-2-34-5-6-7-8-9=51', '1-2-34-5-6-7-8-9=51', '12-34-5-6-7-8-9=51', '...']
51	list	9	['1-2-34-5-6-7-8-9=52', '1-2-3-4-5-6-7-8-9=52', '12-34-5-6-7-8-9=52', '...']
52	list	17	['1-2-3-4-5-6-7-8-9=53', '1-2-34-5-6-7-8-9=53', '1-2-3-4-5-6-7-8-9=53', '1...']
53	list	21	['12-3-4-5-6-7-8-9=54', '1-2-34-5-6-7-8-9=54', '1-2-34-5-6-7-8-9=54', '...']
54	list	16	['1-2-3-4-5-6-7-8-9=55', '12-34-5-6-7-8-9=55', '1-2-34-5-6-7-8-9=55', '...']
55	list	13	['1-2-34-5-6-7-8-9=56', '1-2-34-5-6-7-8-9=56', '12-34-5-6-7-8-9=56', '...']
56	list	14	['12-34-5-6-7-8-9=57', '1-2-3-4-5-6-7-8-9=57', '12-34-5-6-7-8-9=57', '1...']
57	list	16	['1-2-34-5-6-7-8-9=58', '12-34-5-6-7-8-9=58', '1-2-34-5-6-7-8-9=58', '1...']
58	list	17	['12-34-5-6-7-8-9=59', '1-2-34-5-6-7-8-9=59', '1-2-34-5-6-7-8-9=59', '...']
59	list	17	['1-2-34-5-6-7-8-9=60', '1-2-3-4-5-6-7-8-9=60', '12-34-5-6-7-8-9=60', '...']
60	list	11	['1-2-3-4-5-6-7-8-9=61', '1-2-34-5-6-7-8-9=61', '1-2-34-5-6-7-8-9=61', '...']
61	list	13	['1-2-34-5-6-7-8-9=62', '1-2-34-5-6-7-8-9=62', '1-2-34-5-6-7-8-9=62', '...']

Totol solutions - list (100 elements)

Index	Type	Size	Value
62	list	22	['1+2+3+4+5+6+7+8+9=63', '1+2-3+4+5+6+7+8+9=63', '1-2+3+4+5+6+7+8+9=63', ...]
63	list	14	['12+3+4+5+6+7+8+9=64', '1-2+3+4+5+6+7+8+9=64', '123+4+5+6+7+8+9=64', '1-...
64	list	13	['1+2+3+4+5+6+7+8+9=65', '12+3+4+5+6+7+8+9=65', '1+2+3+4+5+6+7+8+9=65', '...
65	list	15	['1+2+3+4+5+6+7+8+9=66', '1+2+3+4+5+6+7+8+9=66', '123+4+5+6+7+8+9=66', '1-...
66	list	15	['12+3+4+5+6+7+8+9=67', '1+2+3+4+5+6+7+8+9=67', '12+3+4+5+6+7+8+9=67', '1+...
67	list	15	['1+2+3+4+5+6+7+8+9=68', '1+2+3+4+5+6+7+8+9=68', '12+3+4+5+6+7+8+9=68', '...
68	list	17	['12+3+4+5+6+7+8+9=69', '1+2+3+4+5+6+7+8+9=69', '12+3+4+5+6+7+8+9=69', '1-...
69	list	7	['12+3+4+5+6+7+8+9=70', '1+2+3+4+5+6+7+8+9=70', '1+2+3+4+5+6+7+8+9=70', '...
70	list	14	['12+3+4+5+6+7+8+9=71', '1+2+3+4+5+6+7+8+9=71', '12+3+4+5+6+7+8+9=71', '1-...
71	list	17	['1+2+3+4+5+6+7+8+9=72', '12+3+4+5+6+7+8+9=72', '1+2+3+4+5+6+7+8+9=72', '...
72	list	15	['1+2+3+4+5+6+7+8+9=73', '123+4+5+6+7+8+9=73', '1+2+3+4+5+6+7+8+9=73', '1+...
73	list	12	['123+4+5+6+7+8+9=74', '12+3+4+5+6+7+8+9=74', '1+2+3+4+5+6+7+8+9=74', '12-...
74	list	13	['1+2+3+4+5+6+7+8+9=75', '1+2+3+4+5+6+7+8+9=75', '123+4+5+6+7+8+9=75', '...
75	list	14	['1+2+3+4+5+6+7+8+9=76', '12+3+4+5+6+7+8+9=76', '1+2+3+4+5+6+7+8+9=76', '...
76	list	14	['1+2+3+4+5+6+7+8+9=77', '123+4+5+6+7+8+9=77', '1+2+3+4+5+6+7+8+9=77', '...
77	list	14	['12+3+4+5+6+7+8+9=78', '1+2+3+4+5+6+7+8+9=78', '123+4+5+6+7+8+9=78', '1+...
78	list	10	['12+3+4+5+6+7+8+9=79', '1+2+3+4+5+6+7+8+9=79', '123+4+5+6+7+8+9=79', '1-...
79	list	9	['1+2+3+4+5+6+7+8+9=80', '123+4+5+6+7+8+9=80', '1+23+4+5+6+7+8+9=80', '1-...
80	list	19	['12+3+4+5+6+7+8+9=81', '1+2+3+4+5+6+7+8+9=81', '123+4+5+6+7+8+9=81', '1-...
81	list	12	['1+2+3+4+5+6+7+8+9=82', '123+4+5+6+7+8+9=82', '123+4+5+6+7+8+9=82', '12+...
82	list	13	['1+2+3+4+5+6+7+8+9=83', '1+23+4+5+6+7+8+9=83', '12+3+4+5+6+7+8+9=83', '1-...
83	list	13	['12+3+4+5+6+7+8+9=84', '1+2+3+4+5+6+7+8+9=84', '12+3+4+5+6+7+8+9=84', '1-...
84	list	12	['12+3+4+5+6+7+8+9=85', '1+23+4+5+6+7+8+9=85', '12+3+4+5+6+7+8+9=85', '1+...
85	list	11	['1+2+3+4+5+6+7+8+9=86', '1+23+4+5+6+7+8+9=86', '12+3+4+5+6+7+8+9=86', '1-...
86	list	12	['1+2+3+4+5+6+7+8+9=87', '123+4+5+6+7+8+9=87', '1+2+3+4+5+6+7+8+9=87', '1+...
87	list	6	['1+2+3+4+5+6+7+8+9=88', '1+2+3+4+5+6+7+8+9=88', '1+2+3+4+5+6+7+8+9=88', '...
88	list	12	['1+2+3+4+5+6+7+8+9=89', '1+2+3+4+5+6+7+8+9=89', '12+3+4+5+6+7+8+9=89', '...
89	list	14	['12+3+4+5+6+7+8+9=90', '1+2+3+4+5+6+7+8+9=90', '12+3+4+5+6+7+8+9=90', '1-...
90	list	16	['12+3+4+5+6+7+8+9=91', '1+2+3+4+5+6+7+8+9=91', '1+23+4+5+6+7+8+9=91', '1-...
91	list	13	['12+3+4+5+6+7+8+9=92', '123+4+5+6+7+8+9=92', '1+23+4+5+6+7+8+9=92', '12+...
92	list	11	['12+3+4+5+6+7+8+9=93', '1+2+3+4+5+6+7+8+9=93', '1+23+4+5+6+7+8+9=93', '1-...

Save and Close

Close

93	1st	11	['123-45+6-7+8+9=94', '1+23+4+56-7+8+9=94', '12-3-4+5+67+8+9=94', '1+2 ...
94	1st	10	['123+4-56+7+8+9=95', '1-2+3+4+5+67+8+9=95', '12+3+4-5-6+78+9=95', '1- ...
95	1st	11	['123-45+6+7+8+9=96', '12+3+4+5+6+7+8+9=96', '1-2+3+4-5+67+8+9=96', '1-2+ ...
96	1st	7	['1-2-3+4+56+7-8+9=97', '12-3-4+5-6+78+9=97', '1-2+3+4+5+67+8-9=97', '1- ...
97	1st	9	['12+3+4-5+67+8+9=98', '1-2-3+4+5+67+8+9=98', '1+2+3+4-5+6+7+8+9=98', ' ...
98	1st	17	['1+23+45+6+7+8+9=99', '12+3+4+56+7+8+9=99', '1-2+3+4+56+7+8+9=99', '1+ ...
99	1st	11	['1+2+3-4+56+7+8+9=100', '12+3+4+5+6+7+8+9=100', '1+2+3+4-5+67+8+9=100', ' ...



0 - List (26 elements)

Index	Type	Size	Value
0	str	17	12-34+5-6+7+8+9=1
1	str	17	1-2-34-56+7+8+9=1
2	str	19	1-2-3-4+5-6-7+8+9=1
3	str	19	1+2-3-4+-5-6-7+8+9=1
4	str	16	12+34+5+6+7+8+9=1
5	str	17	1+2-3+4-5-6+7+8+9=1
6	str	18	1-23+4+5+6+7-8+9=1
7	str	19	1-2-3-4-5+6+7+8+9=1
8	str	19	1+2-3+4-5-6+7+8+9=1
9	str	19	1+2-3-4+5+6-7+8+9=1
10	str	19	1-2-3+4-5+6-7+8+9=1
11	str	16	1-23-4+5+6+7-8+9=1
12	str	19	1+2-3-4+5-6+7+8-9=1
13	str	19	1-2-3+4-5-6+7+8-9=1
14	str	19	1-2-3-4+5+6-7+8-9=1
15	str	19	1+2-3+4+5-6-7+8-9=1
16	str	18	1+23-4-5-6-7+8-9=1
17	str	16	1+23+4-5-6+7+8-9=1
18	str	19	1-2-3+4+5+6+7+8-9=1
19	str	19	1+2-3+4-5+6+7+8-9=1
20	str	17	1+2-34+56-7-8-9=1
21	str	17	1-2-3-4+5+6+7-8-9=1
22	str	16	1-23+4+5+6+7+8+9=1
23	str	15	1+23-4+5+6+7+8+9=1
24	str	16	1+23+4-5+6+7-8+9=1
25	str	15	1-23+4+5+6+7-8+9=1

maximum

44 - list (26 elements)

Index	Type	Size	Value
0	str	20	1-2-3+4-5-6-7+8-9+45
1	str	19	1+2-3-4-5+6+7+8-9+45
2	str	18	1-2-3+4+5+6-7+8+9+45
3	str	18	12+3+4-5-6-7+8+9+45
4	str	19	1-2-3+4-5-6-7+8+9+45
5	str	18	1+2-3-4-5+6+7+8+9+45
6	str	19	1+2-3+4-5+6-7-8+9+45
7	str	18	1-2+3+4-5+6+7-8+9+45
8	str	18	1+2-3+4-5-6+7+8+9+45
9	str	17	12-3-4-5-6+7+8+9+45
10	str	19	1+2+3+4+5+6+7+8-9+45
11	str	19	1+2-3+4-5-6+7+8-9+45
12	str	19	1-2+3+4+5+6-7+8-9+45
13	str	18	1-2-3-4+5+6+7+8-9+45
14	str	17	1+2-3-4+5+6+7+8-9+45
15	str	18	12-3+4+5+6-7-8-9+45
16	str	19	1-2-3+4-5+6+7-8-9+45
17	str	18	1-2-3+4+5+6+7+8-9+45
18	str	17	12-3-4+5+6+7+8-9+45
19	str	16	1+2-3-4-5-6+7+8+9+45
20	str	17	12-3-4-5+6+7+8+9+45
21	str	18	1-2+3-4+5+6-7+8+9+45
22	str	18	1-2+3-4-5-6-7+8+9+45
23	str	17	12-3+4-5+6-7+8+9+45
24	str	17	1+2+3+4-5-6+7+8+9+45
25	str	16	1-2+3+4-5-6+7+8+9+45

Save and Close

Close

87. List (6 elements)

Index	Type	Size	Value
0	str	19	1-2-3+4-5+6+78+9+88
1	str	19	1+2+3-4+5-6+78+9+88
2	str	18	1-2+3+4+5+6+7-8-9+88
3	str	18	1+23-4+5-6+78-9+88
4	str	16	123+4+56+78+9+88
5	str	18	12-3-4-5+6-7+89+88

minimum