# Python Programming

# Nested While Loops

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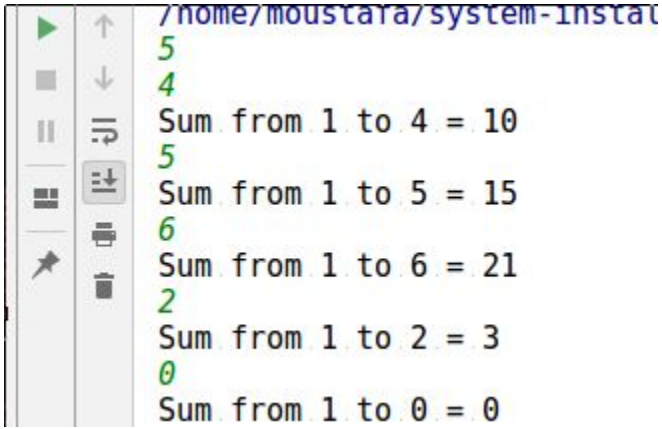
# Nested!

- Whenever we add a block of code, we can make it complex
- So we created nested if conditions
  - Which can be very deep
- Similarly, nested loops
  - Loop inside loop inside loop

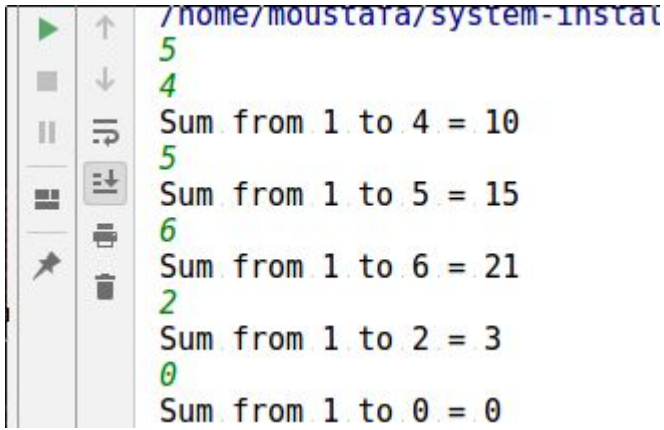
# Nested loop




- Write a program that reads integer T for T **test cases**.
- Then read T numbers (one **per line**)
- For each integer N:
  - **print sum of 1 to N**
- *Remember, we can replace the sum with formula N * (N+1) / 2*
  - Which is more efficient?

# Nested loop

```
2
3   T = int(input())    # test cases count
4
5   # Outer loop: iterate T times for T test cases
6   while T > 0:
7       num = int(input())
8
9       sum = 0
10      start = 1
11
12      # Innter loop: sum from 1 to num
13      while start <= num:
14          sum += start
15          start += 1
16
17      T -= 1
18      print("Sum from 1 to", num, "=", sum)
19
```



# Practice: Print left angled triangle

```
2
3   n = int(input())
4
5   row = 1
6   while row <= n:
7       stars_count = 1
8
9       while stars_count <= row:
10          print('*', end='')
11          stars_count += 1
12
13      print()
14      row += 1
15
```

- Given an integer N. Print a left angled triangle that has N rows.
- See picture for IO

"Acquire knowledge and impart it to the people."

"Seek knowledge from the Cradle to the Grave."