PythonCourse_3_MoreOnLoops

April 18, 2021

```
[1]: #For Loop
     s = "abcd" #the sequence considered here is a string
     for i in s:
         print(i)
```

```
a
b
c
d
```

```
[3]: #To print first n nos
     n = int(input())
     for i in range(0, n, 1): #range(start, stop, stride)
         print(i)
     #Prints only upto (stop - 1)

     #Therefore,
     n = int(input())
     for i in range(0, n + 1, 1): #range(start, stop, stride)
         print(i)
```

```
4
0
1
2
3
4
0
1
2
3
4
```

```
[7]: # default values
     # arg 3: start, stop, stride
     # arg 2: start, stop, 1
     # arg 1: 0,     stop, 1

     n = int(input())
```

```
for i in range(1, n + 1):
    print(i)
print()
for i in range(n + 1):
    print(i)
```

```
4
1
2
3
4

0
1
2
3
4
```

[9]:
```
# Print the multiples of three between 2 nos
a = int(input())
b = int(input())

print()
for i in range (a, b + 1, 1):
    if i % 3 == 0:
        print (i)
## Less code but runs a lot of times
```

```
4
50

6
9
12
15
18
21
24
27
30
33
36
39
42
45
48
```

```python
[11]:  # Aliter for Multiples of 3 : More code but less loops

       a = int(input())
       b = int(input())

       print()
       if a % 3 == 0:
           s = a
       elif a % 3 == 1:
           s = a + 2
       else:
           s = a + 1

       for i in range (s, b + 1, 3):
           print(i)
```

```
7
50

9
12
15
18
21
24
27
30
33
36
39
42
45
48
```

```python
[16]:  #Primality Check

       n = int(input())
       flag = False
       for d in range(2, n, 1): #Trying to divide from 2 to n-1 numbers
           if n % d == 0:
               flag = True
       if flag:
           print("not prime")
       else:
           print("prime")
```

```
99
not prime
```

Pattern using For Loop: 1 232 34543 4567654

```
[3]: n = int(input())
     for i in range(1, n+1, 1):
         #print spaces
         for spaces in range(1, n - i + 1, 1):
             print(' ', end = '')
         #print increasing nos
         for incNo in range(i, 2 * i, 1):
             print(incNo, end = '')
         #print decreasing nos
         for decNo in range(2 * i - 2, i - 1, -1):
             print(decNo, end = '')
         print()
```

```
4
   1
  232
 34543
4567654
```

```
[5]: ##Break Keyword
     i = 1
     while i < 10:
         if i == 4:
             break   #breaks out of loop
         print(i)
         i = i + 1

     #Note: If two while loops and break inside inner loop
     ## --> Breaks out only from that loop while outer loop continues
```

```
1
2
3
```

```
[7]: ##Else Keyword with Loops
     i = 1
     while i < 10:
         print(i)
         i = i + 1
     else:
         print('Prints once at end')

     print()
     ##Else part executed only when while loop exited due to Condition becoming False
     ##Else part NOT executed when while loop exited due to break
     i = 1
```

```python
while i < 10:
    if i == 3:
        break
    print(i)
    i = i + 1
else:
    print('Prints once at end') # Not printed in this case
```

```
1
2
3
4
5
6
7
8
9
Prints once at end

1
2
```

```python
[12]: ## Continue Keyword
print("Without continue")
for i in range(1,10 + 1,1):
    print(i)

print()
print("With continue: Skip Multiples of 3")
for i in range(1,10 + 1,1):
    if i % 3 == 0:
        continue # skips the iteration printing multiples of 3
    print(i)
```

```
Without continue
1
2
3
4
5
6
7
8
9
10

With continue: Skip Multiples of 3
1
```

```
2
4
5
7
8
10
```

[13]:
```python
## Continue can be used in cases where some part of code has to be executed for
 ↪all
## but has to be skipped for some
print("With continue: Print all nos twice and Multiples of 3 once")
for i in range(1,10 + 1,1):
    print(i)
    if i % 3 == 0:
        continue # skips the iteration printing multiples of 3
    print(i) ## This is skipped if continue hit
```

```
With continue: Print all nos twice and Multiples of 3 once
1
1
2
2
3
4
4
5
5
6
7
7
8
8
9
10
10
```

[16]:
```python
## Continue Keyword with while Loop

## Include increment even for continue --> Important
## Else it will go into infinite loop
i = 1
while i <= 10:
    if i % 3 == 0:
        i = i + 1 # Has to be included before continue to prevent infinite loop
        continue
    print(i)
    i = i + 1
```

```
1
```

```
2
4
5
7
8
10
```

[18]:
```python
## Pass Keyword

## Used to pass if, while or for
## To prevent the compile error when if, while, for is empty
i = 7
if i < 10:
    pass
print('end if')

print()
for i in range (1,5,1):
    pass
print('end for')
```

```
end if

end for
```

1111 000 11 0

[22]:
```python
n = int(input())
for i in range(1, n + 1, 1):
    for j in range(1, n - i + 2, 1):
        if i % 2 == 0:
            print("0", end = '')
        else:
            print("1", end = '')
    print()
```

```
5
11111
0000
111
00
1
```

1234 234 34 4 34 234 1234

[48]:
```python
n = int(input())
for i in range(1, n + 1, 1):
    #print spaces
    for spaces in range(1, i):
```

```python
            print(' ', end = '')
        #print increasing nos
        p = i
        for incNos in range(1, n - i + 2, 1):
            print(p, end = '')
            p = p + 1
        print()
for i in range(n-1, 0, -1):
    #print spaces
    for spaces in range(1, i, 1):
        print(' ', end = '')
    #print increasing nos
    p = i
    for incNo in range(1, n - i + 2, 1):
        print(p, end = '')
        p = p + 1
    print()
```

```
4
1234
 234
  34
   4
  34
 234
1234
```

```
* *** ***** *** *
```

```python
[73]: N = int(input())
      n1 = (N + 1) // 2
      n2 = N - n1
      for i in range(1, n1 + 1, 1):
          #print spaces
          for spaces in range(1, n1 - i + 1, 1):
              print(' ', end = '')
          #print stars
          for stars in range(1, 2 * i, 1):
              print('*', end = '')
          print()
      p = N - 2
      for i in range(1, n2 + 1, 1):
          #print spaces
          for spaces in range(i):
              print(' ', end = '')
          #print stars
          for stars in range(1, p + 1, 1):
```

```python
        print('*', end = '')
    p = p - 2
    print()
```

9
5
4

```
    *
   ***
  *****
 *******
*********
 *******
  *****
   ***
    *
```

4444444 4333334 4322234 4321234 4322234 4333334 4444444

```python
N = int(input())
for i in range(1, N + 1):
    for j in range(1, N + 1):
        if i < j:
            min = i
        else:
            min=j
        print(N - min + 1, end = "")

    for j in range(N - 1, 0, -1):
        if i < j:
            min = i
        else:
            min=j
        print(N - min + 1, end = "")
    print()

for i in range(N - 1, 0, -1):
    for j in range(1, N + 1):
        if i < j:
            min = i
        else:
            min=j
        print(N - min + 1, end = "")

    for j in range(N - 1, 0, -1):
        if i < j:
            min = i
        else:
```

```
            min=j
        print(N - min + 1, end = "")
    print()
```

```
4
4444444
4333334
4322234
4321234
4322234
4333334
4444444
```

1 2 3 4 5 11 12 13 14 15 21 22 23 24 25 16 17 18 19 20 6 7 8 9 10

[111]:
```python
n = int(input())
startValue = 1
for i in range(1,n+1):
    for j in range(startValue,startValue + n):
        print(j,end=" ")
    print()
    if(i==((n+1)//2)):
        if((n%2)!=0):
            startValue = n*(n-2)+1
        else:
            startValue = n*(n-1) + 1
    elif((i>(n+1)//2)):
        startValue = startValue - 2*n
    else:
        startValue = startValue + 2*n
```

```
5
1 2 3 4 5
11 12 13 14 15
21 22 23 24 25
16 17 18 19 20
6 7 8 9 10
```