Nested Looping Statements

Defining looping statement inside looping statement is called nested looping statements.

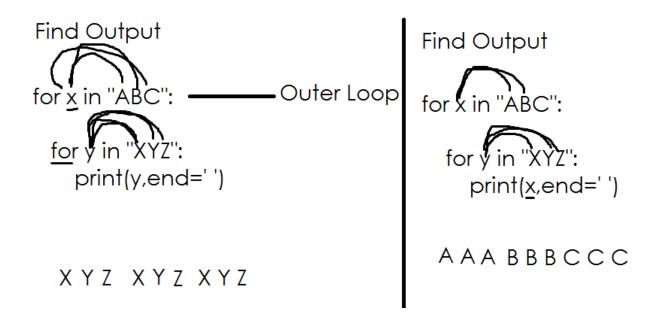
- 1. Nested for
- 2. Nested while

Nested for loop

Defining for loop inside for loop is called nested for.

Syntax:

for variable in <iterable>: # Outer For Loop statement-1; for variable in <iterable>: # Inner For Loop statement-1 statement-2 statement-2



Example:

```
# Write a program to generate tables from 1 to 10
for num in range(1,11): # 1 2 3 4 5 6 7 8 9 10
  for i in range(1,11): # 1 2 3 4 5 6 7 8 9 10
    print(f'{num}x{i}={num*i}')
  input()
Output:
1x1=1
1x2=2
1x3=3
1x4=4
1x5=5
1x6=6
1x7=7
1x8=8
1x9=9
1x10=10
2x1=2
2x2=4
2x3=6
2x4=8
2x5=10
2x6=12
2x7=14
2x8=16
2x9=18
2x10=20
3x1=3
3x2=6
3x3=9
3x4=12
3x5=15
3x6=18
3x7=21
3x8=24
```

3x9=27

```
3x10=30
4x1=4
4x2 = 8
4x3=12
4x4=16
4x5=20
4x6=24
4x7=28
4x8=32
4x9=36
4x10=40
Example:
# Write a program to generate prime numbers from 1 to 20
for num in range(1,21):# 1 2 3 4 5 6 7 8...20
  c=0
  for i in range(1,num+1): # 1 2 3 4
    if num%i==0:
       c=c+1
  if c==2:
    print(num)
Output:
3
5
7
11
13
17
19
Example:
# Write a program to generate factorials of numbers
# from 1-5
```

```
for num in range(1,6): # 1 2 3 4 5
  fact=1
  for i in range(1,num+1):
     fact=fact*i
  print(f'{num}-->{fact}')
```

Output:

1-->1

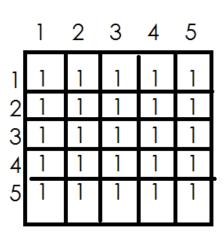
2-->2

3-->6

4-->24

5-->120

Patterns



1 2 3 4 5 1 1 1 1 1 1 2 2 2 2 2 2 3 3 3 3 3 3 4 4 4 4 4 4 5 5 5 5 5	for i in range(1,6): for j in range(1,6): print(i,end=' ') print()
5 5 5 5 5 4 4 4 4 4 3 3 3 3 3 2 2 2 2 2 2 1 1 1 1 1 1	for i in range(5,0,-1): for j in range(1,6): print(i,end=' ') print()
1 2 3 4 5 1 1	for i in range(1,6): # 12345 for j in range(1,i+1): print("1",end="') print()
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	for i in range(5,0,-1): for j in range(1,i+1): print("1",end=" ') print()