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September 11

LOOPS:

Loops in python are used to execute a block of code repeatedly until a certain condition is met.

Types of loops in python:

1.For loop

2.While loop

3.Nested loop

majorly it is only two types of loops for and while.

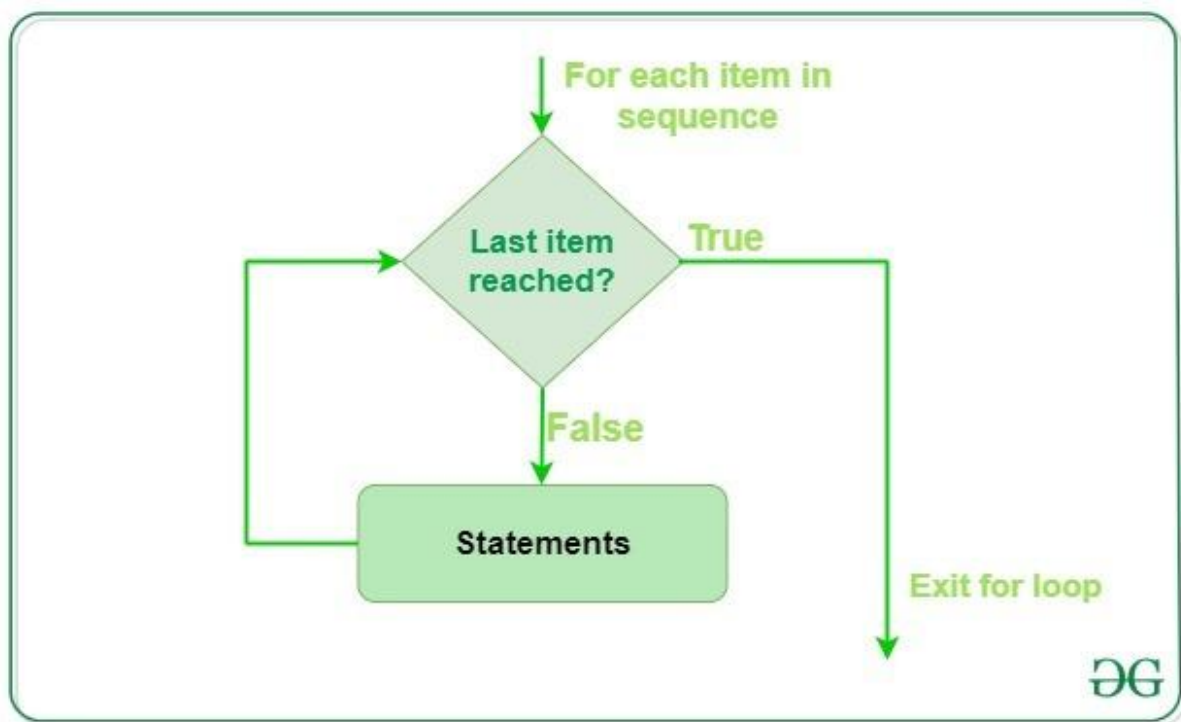Nested loops can be further divided into 4 sub types:

1. * for loop inside for loop

2. * for loop inside while loop

3. * while loop inside for loop

4. * while loop inside while loop

1. For loop:

      In for loop we have two types

      1. for loop with sequence(string,list,tuple,dict,set)

      2. for loop with range

- For loop allows you to apply the same operation to every item within loop.

- Using For Loop avoid the need of manually managing the index.

- For loop can iterate over any iterable object, such as dictionary, list or any custom iterators.

1. for loop with sequence

To print the name in character wise

name = "Laxmi"

print(name)

Laxmi

Using loop:

for i **in** name: *# i is itterative variable*

   print(i)

L

a

x

m

i

Numbers are not considered as sequences.All the sequence data has a position.

example:

 Priyanka - sequence

 12345 - not a sequence

to print the position with a character

 enumerate is a function used to print the position and character of the given variable.

output is a tuple consisting of the position followed by the character stored in the position.

for i **in** enumerate(name):

   print(i)

(0, 'L')

(1, 'a')

(2, 'x')

(3, 'm')

(4, 'i')

fruit = ['apple','mango','grape','pineapple']

```
print(fruit)
```

['apple', 'mango', 'grape', 'pineapple']

```
for i in fruit:
    print(i)
```

apple

mango

grape

pineapple

In any other programming language we have three stages for range:

initialization

condition

increment/decrement

In python:

range(start value,stop value,step size)

step size +ve incrementation

step size -ve decrementation

 # 2.for loop with range

```
for i in range(1,11,1):
    print(i)
```

1

2

3

4

5

6

7

8

9

10

```
range(1,11,1)
(i=1;i<11;i+1)
i = 1,2,3,4,5,6,7,8,9,10
```

```
range(1,10,1)
(i=1;i<10;i+1)
i = 1,2,3,4,5,6,7,8,9
```

to repeat a statement for 20 times

```
for i in range(1,21,1):
    print("Laxmi")
```

Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

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Laxmi

Laxmi

Laxmi

Laxmi

Laxmi

```
for i in range(20):
    print(i)
```
0

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

In range

The default start value is 0

The default step size is 1

If we are mentioning only one value in the range, then it will be considered as a stop value.

we can skip both start and step values, but when u want to mention any one of them, the other thing should be used compulsorily.

to print the position and character using the range function

name = "Laxmi"

for i **in** range(0,5,1):*#in case of not knowing the length we can pass len(name) in that place*

   print(i,name[i])

0 L

1 a

2 x

3 m

4 i

with the length function

name = "priya"

for i **in** range(0,len(name),1):

   print(i,name[i])

0 P

1 r

2 i

3 y

4 a

Write a program to print even numbers from 1 to 20

for i **in** range(2,21,2):

   print(i)

2

4

6

8

10

12

14

16

18

20

Write a program to print 1 to 10 in the format

1 = odd number

2 = even number

10 = even number

for i **in** range(1,11,1):

   if(i**%**2 == 0):

```
    print(i, "=", "Even number")
  else:
    print(i, "=", "Odd number")
```

1 = Odd number

2 = Even number

3 = Odd number

4 = Even number

5 = Odd number

6 = Even number

7 = Odd number

8 = Even number

9 = Odd number

10 = Even number