

LOOP :-

- * Loops in python are used to execute a block of code repeatedly until a certain condition is met.
- * A loop is a programming structure that repeats a set of instructions as long as a specified condition is true.

3 types of loops:-

1. while loop
2. For loop
3. Nested For Loop

- * For loop inside for loop
- * for loop inside while loop
- * [for, while] loop inside while loop
- * while loop inside for loop

1. For Loop:-

- * Python for loop is used for repeated execution of group of statements for the desired number of times. It means iterates over the items of lists, tuples, string, the dictionaries and other iterable objects.
- * In python, a for loop is used to iterate over a sequence (like a list, tuple, string or range) and execute a block of code repeatedly for each element in the sequence.

In for loop there are 2 types of for loop

- * for loop with sequence (most) statements in i and
* for loop with range (i) with (i, n)

* for loop with sequence:-

- * In Python, a for loop with sequence means iterating over each element of an iterable sequence - such as a list, tuple, string, set, or dictionary - one item at a time.
- * A sequence is an ordered collection (of items) (like a list or tuple) where each item has a position (index).

Syntax

for i in sequence_name

 # Iterative variable being modified with word 'in'

(i, n)

Ex:-

name = "Niveditha"

: (most) statements in i not
(i) thing

for i in name:

 print(i) [([i]) : {vars} {o} ; 3 = 207 ;] thing

(i, n)

(i, n)

op
n
v
c
d
i
+
t
a

b = read(), n = 207 b = read(), n = 209
(i, n) (i, n)
print(i), o < 207 print(i), o < 209
(i, n) (i, n)
print(i), d > 207 print(i), d > 209
(i, n) (i, n)
if cond1, r = 207 if cond1, r = 209
(i, n) (i, n)
else cond2, s = 208 else cond2, s = 208
(i, n) (i, n)

* If want name with allotted position

for i in enumerate(name):

print(i)

(0, 'N')

(1, 'i')

(2, 'v')

(3, 'e')

(4, 'd')

(5, 'r')

(6, 't')

(7, 'h')

(8, 'a')

* to know the positions and character specifically.

(0, 'N')

for i in enumerate(name):

print(i).

print(f'pos={i[0]}, char={i[1]}')

(0, 'N')

(4, 'd')

Pos=0, char=N

Pos=4, char=d

(1, 'i')

(5, 'i')

Pos=1, char=i

Pos=5, char=i

(2, 'v')

(6, 't')

Pos=2, char=v

Pos=6, char=t

(3, 'e')

(7, 'h')

Pos=3, char=e

Pos=7, char=h

(8, 'a')

Pos=8, char=a

* For Loop with Range:-

In Python, a for loop with range() is used to repeat a block of code a specific number of times.

The range() function generates a sequence of numbers, which the for loop iterates over.

* initialization

* condition

* incrementation / decrementation

range (start value, stop value, step size)

range (i=0, i<11, i=i+1) means we have to print 11 lines
default start value: 0
default step size: 1

Syntax:

```
for i in range(1):  
    statements
```

for ex

```
for i in range(1, 11, 1):  
    print("i={i}")  
    print("Hello")
```

Output

i=1	i=5	i=9
Hello	Hello	Hello
i=2	i=6	i=10
Hello	Hello	Hello
i=3	i=7	
Hello	Hello	
i=4	i=8	
Hello	Hello	

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* initialization

* condition

* incrementation / decrementation

range (start value, stop value, step size)

range (i=0, i<11, i=i+1) (i) this is a condition

default start value: 0

default step size: 1

Syntax:

```
for i in range ():
    statements
```

for ex

```
for i in range (1, 11, 1):
    print ("i={}".format(i))
    print ("Hello")
```

O/P

i=1	i=5	i=9
Hello	Hello	Hello
i=2	i=6	i=10
Hello	Hello	Hello
i=3	i=7	
Hello	Hello	
i=4	i=8	
Hello	Hello	

Exercise :-

1. Print numbers from 01 to 20
for i in range(0, 21, 1) do print(i)

(Answer, to print(i) is storing values 01 to 20 in
memory, so answer is 01 to 20)

O/P

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

now what? goal of 20 is

2. Print even numbers from 0 to 100, i.e. 0, 2, 4, ...

for i in range(0, 101, 2)

print(i)

0
2
4
6
8
10

3. Print odd numbers from 91 to 100

for i in range(91, 100, 2)

91
93
95
97
99

$i = 91$
odd
 $91 - 1$
odd