

# Loop: Something that repeats continuously.

## For Loop :

A for loop is used for iterating over a sequence (that is either a list, a tuple, a dictionary, a set, or a string).

With the for loop we can execute a set of statements, once for each item in a list, tuple, set etc.

The syntax of for loop is:

```
for i in collection:  
    #body of for
```

```
In [3]: for i in 1234:  
        print(i)
```

```
-----  
TypeError                                     Traceback (most recent call last)  
Cell In[3], line 1  
----> 1 for i in 1234:  
      2     print(i)  
  
TypeError: 'int' object is not iterable
```

```
In [4]: for i in "Python":  
        print(i)
```

```
P  
y  
t  
h  
o  
n
```

```
In [5]: for l in [10,20,30,40]:  
        print(l+5)
```

```
15  
25  
35  
45
```

```
In [6]: for t in (10,20,30):  
        print(t)
```

```
10  
20  
30
```

```
In [7]: for s in {25,25,25,89,89,45}:
    print(s)
```

```
89
45
25
```

```
In [8]: d = {'name':'saanvi','course':'AIML'}

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

```
name
course
```

```
In [9]: d.items()
```

```
Out[9]: dict_items([('name', 'saanvi'), ('course', 'AIML')])
```

```
In [10]: for i in d.items():
    print(i)
```

```
('name', 'saanvi')
('course', 'AIML')
```

```
In [11]: for i in "Hello and Welcome to CTTC":
    print(i)
```

```
H
e
l
l
o
```

```
a
n
d
```

```
W
e
l
c
o
m
e
```

```
t
o
```

```
C
T
T
C
```

```
In [15]: for i in "Hello and Welcome to CTTC":
    print(i,end='🍕')
```

In [16]: `#Print 1 to 10 using for Loop.`

```
for i in [1,2,3,4,5,6,7,8,9,10]:
    print(i,end=' ')
```

1 2 3 4 5 6 7 8 9 10

**range() : It is a built-in function generates a sequence of integers between any given interval.**

`range(start,stop+1,step)`

In [17]: `for i in range(1,101,1):`

```
print(i,end=' ')
```

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31  
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59  
60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87  
88 89 90 91 92 93 94 95 96 97 98 99 100

In [18]: `for i in range(1,101,2):`

```
print(i,end=' ')
```

1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59  
61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99

In [19]: `for i in range(0,101,2):`

```
print(i,end=' ')
```

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58  
60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100

In [20]: `for i in range(100,0,-1):`

```
print(i,end=' ')
```

100 99 98 97 96 95 94 93 92 91 90 89 88 87 86 85 84 83 82 81 80 79 78 77 76 75 74 73  
72 71 70 69 68 67 66 65 64 63 62 61 60 59 58 57 56 55 54 53 52 51 50 49 48 47 46 45  
44 43 42 41 40 39 38 37 36 35 34 33 32 31 30 29 28 27 26 25 24 23 22 21 20 19 18 17  
16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

In [22]: `for i in range(100,0,-1):`

```
if i%2==0:
    print(i,end=' ')
```

100 98 96 94 92 90 88 86 84 82 80 78 76 74 72 70 68 66 64 62 60 58 56 54 52 50 48 46  
44 42 40 38 36 34 32 30 28 26 24 22 20 18 16 14 12 10 8 6 4 2

In [ ]:

**Wapp to find out the numbers which are divisible by 3 between 100-200 in reverse**

## order.

```
In [23]: for i in range(200,99,-1):
    if i%3==0:
        print(i,end=' ')
198 195 192 189 186 183 180 177 174 171 168 165 162 159 156 153 150 147 144 141 138
135 132 129 126 123 120 117 114 111 108 105 102
```

## wapp to print a multiplication table of given number by the user using for loop

```
In [25]: n = int(input('Enter a number : '))
for i in range(1,11):
    print(n,'X',i,'=',n*i)
```

```
10 X 1 = 10
10 X 2 = 20
10 X 3 = 30
10 X 4 = 40
10 X 5 = 50
10 X 6 = 60
10 X 7 = 70
10 X 8 = 80
10 X 9 = 90
10 X 10 = 100
```

```
In [27]: #Factors of a given number
n = int(input('Enter a number : '))
print("The factors are : ")

for i in range(1,n+1):
    if n%i==0:
        print(i,end=' ')
```

The factors are :

```
1 2 4 5 10 20
```

```
In [26]: #To find all the vowels present in a string
```

In [ ]:

In [ ]:

## nested for loop:A nested loop is a loop inside a loop.

The "inner loop" will be executed one time for each iteration of the "outer loop":

```
In [28]: for i in range(1,4):
    for j in range(1,5):
        print(i,j)
```

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

```
In [ ]:
```

## Pattern Printing Using for loop

### Print the Pattern

```
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

```
In [ ]:
```

### Print the Pattern

```
*
```

  

```
* *
```

  

```
* * *
```

  

```
* * * *
```

  

```
* * * * *
```

```
In [32]: rows = int(input('Enter rows : '))
for i in range(1,rows+1):
    print('*' * i)
```

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

In [ ]:

## Print the Pattern

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

In [33]: `rows = int(input('Enter rows : '))`

```
for i in range(rows,0,-1):  
    print('*' * i)
```

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

In [ ]:

## Print the Pattern

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

In [35]: `rows = int(input('Enter rows : '))`

```
for i in range(1,rows):  
    print('*' * i)  
  
for i in range(rows,0,-1):  
    print('*' * i)
```