For loop

- The iterator starts from the beginning of the sequence. In each iteration, the iterator updates to the next value in the sequence.
- In a for loop, we need to define three main things:
1. The name of the iterator
2. The sequence to be traversed
3. The set of operations to perform

image

Range Function

```python
range(5)

range(0, 5)

list(range(5))
[0, 1, 2, 3, 4]


list(range(11))
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]


list(range(1, 5))
[1, 2, 3, 4]


list(range(1, 9, 2))
[1, 3, 5, 7]


# Quiz
list(range(1, 11, 2))
[1, 3, 5, 7, 9]
```

```
print(list(range(8, 8)))
```

[]

```
print(list(range(7, 8)))
```

[7]

```
print(list(range(10, 1)))
```

[]

```
list(range(10, 1, -1))
```

[10, 9, 8, 7, 6, 5, 4, 3, 2]

```
print(list(range(1, 11, -1)))
```

[]

```
print(list(range(1, 11, 1)))
```

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

iterable, iterator and iteration

Print numbers from 1 to 5
```
start = 1

while start <= 5:
    print(start)
    start += 1
```

1
2
3
4
5

```python
for i in range(1, 5):
    print(i)
```

```
1
2
3
4
```

Print numbers from 1 to N
Using a while loop

```python
n = int(input())

start = 1

while start <= n:
    print(start)
    start += 1
```

```
 10
```

```
1
2
3
4
5
6
7
8
9
10
```

```python
n = int(input())

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

```
 10
```

```
1 2 3 4 5 6 7 8 9 10
```

Print numbers from N to 1

```python
n = int(input())

for rahul in range(n, 0, -1):
    print(rahul, end=" ")
```

 10

10 9 8 7 6 5 4 3 2 1

Print all odd numbers from 1 to n

```python
n = int(input())

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

    # check for odd value
    if i % 2 == 1:
        print(i)
```

 10

1
3
5
7
9

```python
n = int(input())

for i in range(1, n+1, 2):
    print(i, end=" ")
```

 10

1 3 5 7 9

Print all even numbers from 0 to n

```python
n = int(input())

for i in range(0, n+1, 2):
    print(i, end=" ")
```

```
10
```

```
0 2 4 6 8 10
```

Print sum of all odd numbers from 1 to n

```python
n = int(input())

for i in range(1, n+1, 2):
    print(i)
```

```
10
```

```
1
3
5
7
9
```

```python
n = int(input())

total = 0
for i in range(1, n+1, 2):
    total += i

print(total)
```

```
10
```

```
25
```

Print sum of all even numbers from 0 to n

```python
n = int(input())

total = 0
for i in range(0, n+1, 2):
    total += i

print(total)
```

```
10
```

```
30
```

Count of even numbers from 0 to n

```python
n = int(input())
count = 0

for i in range(0, n+1, 2):
    count += 1

# We use count here after completion of loop
print(count)
```

```
 10
```

```
6
```