

# For Loops in Python

**While** loops continue to run until some requirement is met, **for** loops run a block of code a specific number of times. Each time the block runs is called an **iteration** and it can run over a range, string, sequence, anything that can be iterated.

## Iterating over a range

In the code below:

```
# the variable "counter" increases by 1 with each iteration
# the iterations start at the first number in the range
# the iteration cease prior to the last number in the range
```

```
for counter in range(0, 11): # <-- (0 included, 11 excluded)
    print(counter) # <-- This block is executed 10 times
```

The code below does the same thing, we assume a starting point of 0 – so 11 iterations

```
for counter in range(11):
    print(counter) # <-- This block is executed 10 times
```

We can loop forwards or backwards:

```
for counter in reversed(range(1,11)):
    print(counter)

print("!!~~BLAST OFF~~!!")
```

The **for loop** by **range** uses (**first, last, step**) – **first** is inclusive, **last** is exclusive and **step** determines how much to increment the counter variable by on each iteration.

```
for counter in (range(0, 21, 2)):
    print(counter)
```

Outputs: 0 2 4 6 8 10 12 14 16 18 20 ← in a vertical list

## Iterating over a string

```
greeting = "GIDDAY MATE!"  
  
for counter in greeting:  
    print(counter)
```

## Commands **continue** or **break**

We want to list all of the numbers between 1 and 20 but we must exclude 13

The **continue** command allows the loop to continue iterating.

```
for counter in range(1, 21):  
    if counter == 13:  
        continue  
    else:  
        print(counter)
```

The **break** command ends the loop and breaks out of it

```
for counter in range(1, 21):  
    if counter == 13:  
        break  
    else:  
        print(counter)
```

## More Examples:

```
# Iterating over a list  
fruits = ['apple', 'banana', 'cherry']  
for fruit in fruits:  
    print(fruit)  
  
# Iterating over a string  
word = 'Python'  
for letter in word:  
    print(letter)  
  
# Iterating over a range  
for number in range(1, 5):  
    print(number)
```

## Exercise:

Create a program that uses a "for" loop to iterate through a list of numbers and print each number multiplied by 2.