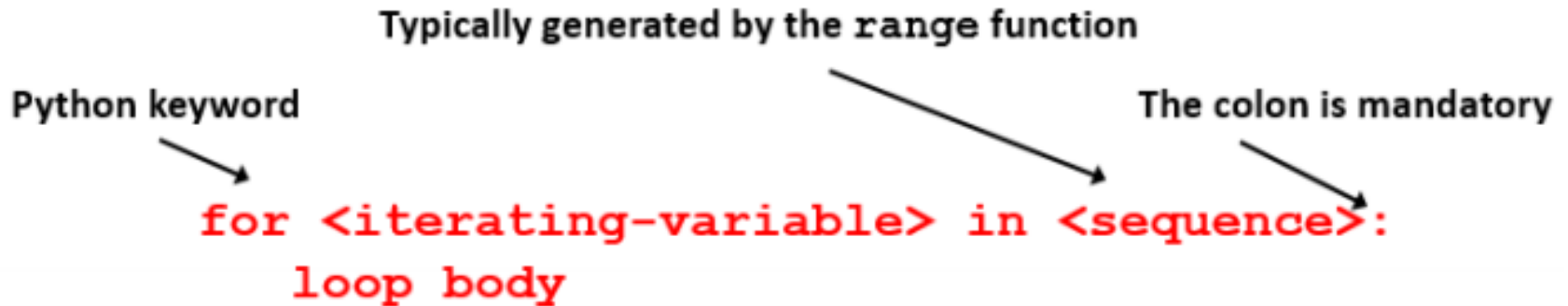# The for loop

for loops are the preferred method of iteration when it's known how many times to repeat.

Typically generated by the `range` function
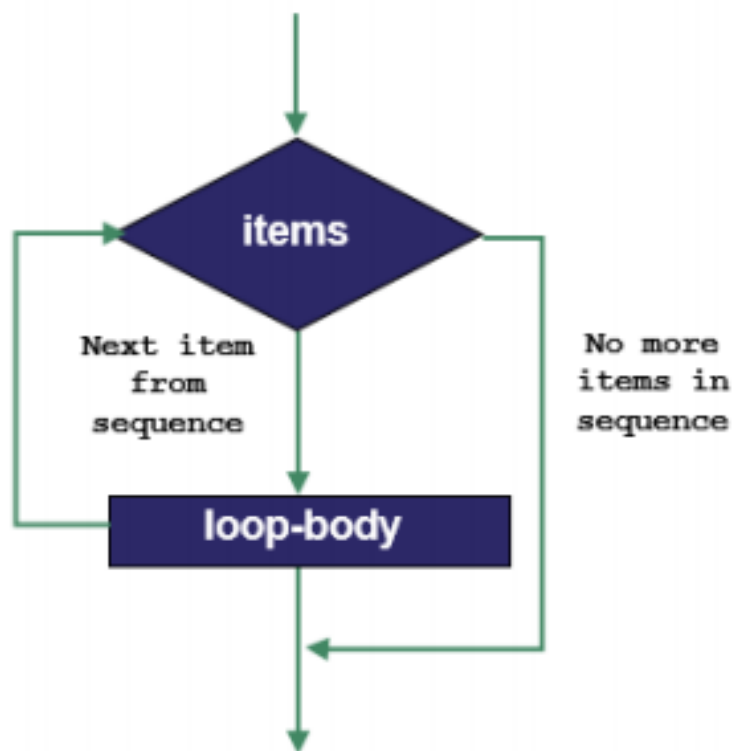
Python keyword

The colon is mandatory

```
for <iterating-variable> in <sequence>:
    loop body
```

items

Next item
from
sequence

No more
items in
sequence

loop-body

for loop flowchart

The for loop

To start, we will use a function called range(). This creates a range of integers. The numbers inside the brackets are called the arguments.

Example of basic for loop:

```
for y in range(1,5):
    print(y)
```

Here is the output:

```
1
2
3
4
```

for loop

Notice that the last number printed is 4, not 5.

The second number inside the range bracket tells the computer to count up to but not including that number.

range()	Example and explanation

One argument	```for y in range(5):```
	 ``` print(y)```
	
	 Lists the integers from 0 up to but not including 5. Note when there is only one argument, the range starts at 0.

Two arguments	```for y in range(1,5):```
	 ``` print(y)```
	
	 Lists the integers from 1 up to but not including 5. The first argument is called the start argument and the second is known as the stop argument.

Three arguments	```for y in range(1,10,2):```
	 ``` print(y)```
	
	 Lists the integers from 1 to 9, in steps of 2. The third argument is known as the step argument. Its value is called the increment or decrement value.

Going backwards	```for y in range(10,0,-1):```
	 ``` print(y)```
	
	 Lists the integers from 10 to 1, in steps of 1, backwards. This happens because the step argument is negative i.e., it has a decrement value.

Example

The short program serves to demonstrate main features of a `for` loop.

```
# Simple for loop

for counter in range(10):
    print("Hello World", counter)

 print("Goodbye")
```

Simple `for` loop demo.

```
Hello World 0
Hello World 1
Hello World 2
Hello World 3
Hello World 4
Hello World 5
Hello World 6
Hello World 7
Hello World 8
Hello World 9
Goodbye
```

Program Output

Note: Range is a built in functions which returns a list of values.

In this example, range(10) returns a list of integers from 0 to 9

```
inputText = "John28"
for character in inputText:
    print(character)
```

Here is the output:

```
J
o
h
n
2
8
```

A for loop can also be used to print single characters from a string

Examples

https://replit.com/@suzannelinnane/for-loops#main.py