



For Loops

The Common While Loop

You might have noticed that you type certain kinds of while loops a *lot*.

```
let array1 = [5, 7, 2]
var i = 0
while i < array1.count {
    print(array1[i])
    i += 1
}
```

You will commonly iterate over arrays like above and count from one number to another.

For Loops

If you're like any programmer, you probably want a faster, more compact way to do these while loops. Well, you're in luck!

BEFORE	AFTER
<pre>// Counting to 10 var x = 0 while x <= 10 { print(x) x += 1 }</pre>	<pre>// Counting to 10 for num in 0...10 { print(num) }</pre>
<pre>// Iterating over arrays let array1 = [5, 7, 2] var i = 0 while i < array1.count { print(array1[i]) i += 1 }</pre>	<pre>// Iterating over arrays let array1 = [5, 7, 2] for x in array1 { print(x) }</pre>

Ranges

0...10 represents 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
while 0..<10 just represents 0, 1, 2, 3, 4, 5, 6, 7, 8, 9.

Parts of a For Loop

The variable after the keyword `for` is the iteration variable and does not need to be initialized before its use in the for loop. The iteration variable is the variable that changes by the guidelines of the for loop each loop. So, `num` is the iteration variable in the first above for loop that becomes each number between and including 0 and 10, and `x` is the iteration variable in the second above for loop that becomes each element (in order) in the array the for loop is iterating over (`array1`).

The range or array after the keyword `in` is the set of items that the iteration variable becomes after each loop. So, in the first for loop above, `num` becomes 0 in the first loop, 1 in the next loop, 2 in the next loop, and on, all the way to 10 in the last loop. In the second for loop above, `x` becomes 5, the first element in `array1`, in the first loop, then 7 in the next loop, and finally 2 in the last loop.

When to Use What

For loops are super handy for some very common things, but not so handy for others. In general, you should use them for iterating over arrays and when the number of code repetitions is fixed and clear, like you have to iterate over the same amount of years a person is at a given time or just 10. Otherwise, use while loops, especially when the number of repetitions is not fixed or you don't know how many times you'll need to repeat.