

while loops

(Iterative code)

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This video will discuss **while loops** in Python.

while loops

- while loops use a test condition to determine when to stop.
- At the start of each iteration, the condition is tested...
 - if true, the loop continues
 - if false, the loop ends
- Note: the condition being tested should change with each iteration. Otherwise, the loop will never end. (hint: use ctrl-C to manually break an endless loop)

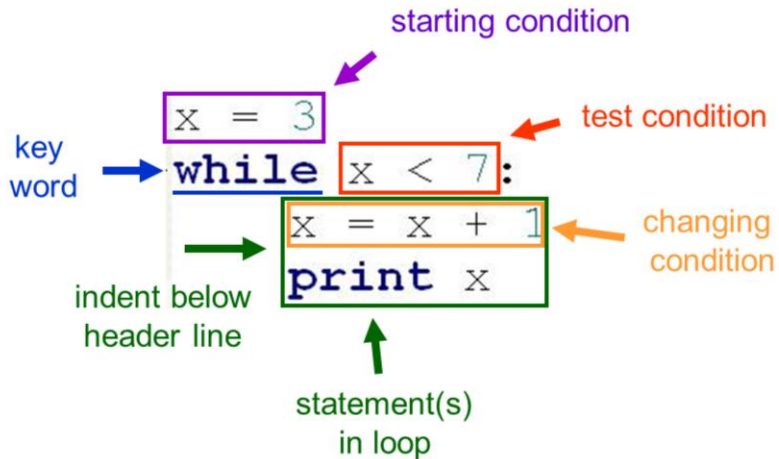
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While loops use a test condition to determine when to stop running.

The condition is tested at the start of each iteration – the loop continues as long as the condition is true; the loops ends when the condition is false.

Note that the condition being tested should change with each iteration, otherwise the while loop may never end. If your script does get stuck in an “endless” while loop, then you can use ctrl-C to break the loop or restart the Python Shell.

while loop elements



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While loops typically begin by defining a starting condition.

The actual loop begins with the header line which starts with the key word **while**

followed by the test condition.

The header line is followed by one or more indented lines that are associated with the while loop.

These indented lines should include a statement that changes the test condition so that the loop will eventually end.

while loop: example

```
x = 5
while x < 7:
    print x
    x = x + 1
```

description	print output
<u>Iteration 1</u> 1) x = 5 2) x < 7 is <u>true</u> 1) print x 2) add 1 to x	5
<u>Iteration 2</u> 1) x = 6 2) x < 7 is true 1) print x 2) add 1 to x	6
<u>Iteration 3</u> 1) x = 7 2) x < 7 is <u>false</u> 3) end loop	

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Let's look at an example of a while loop in operation.

At the start of the 1st iteration, the value of x is 5. The condition is tested and found to be true. The print statement runs and prints 5. The value of x is also redefined so that it is increased by 1.

At the start of the 2nd iteration, the value of x is 6. The condition is tested and found to be true. The print statement runs and prints 6. The value of x is also redefined so that it is increased by 1.

At the start of the 3rd iteration, the value of x is 7. The condition is tested and found to be false so the loop ends.