

Y9 Python Help Sheet – Loops

There are two types of loop that you need to know...

FOR Loops (count-controlled)

A FOR loop is usually used to repeat through a set of commands a set number of times.

e.g.1

```
for x in range(0,20):  
    print("Hello")
```

would print "Hello" 20 times

e.g.2

```
for x in range(0,10)  
    print(x)
```

would print the numbers 0 to 9 (**up to but not including 10**)

e.g.3

```
for x in range(0,11)  
    print(x*x)
```

would print the square numbers 0^2 to 10^2 (**up to but not including 11^2**)

e.g.4

If you want to do something other than count up in ones, you can enter a step value:

```
for x in range(10,0,-1)  
    print(x)
```

would print the numbers 10 down to 1 (**down to but not including 0**)

WHILE Loops (condition-controlled)

A WHILE loop is usually used to repeat through a set of while a condition is met.

e.g.1

```
x=0  
while x < 20:  
    print("Hello")  
    x = x + 1
```

would print "Hello" 20 times

e.g.2

```
x=0  
while x < 10:  
    print(x)  
    x = x + 1
```

would print the numbers 0 to 9 (**up to but not including 10**)

e.g.3

```
x=0
while x <= 10:
    print(x*x)
    x = x + 1
```

would print the square numbers 0^2 to 10^2

e.g.4

```
x=10
while x > 0:
    print(x)
    x = x - 1
```

would print the square numbers 10 down to 1

Questions in Python

FOR Loops

1. Create a **for** loop that displays the even numbers from 0 to 20
2. Create a **for** loop that prints "Hello" 1000 times
3. Create a program that contains a **for** loop that counts down from 100 to 0 and then says "BOOM!"
4. Write a program that asks for a number and then uses a **for** loop to print all the odd numbers up to that value

WHILE Loops

5. Create a **while** loop that displays the even numbers from 0 to 20
6. Create a **while** loop that prints "Hello" 1000 times
7. Create a program that's contains a **while** loop that counts down from 100 to 0 and then says "BOOM!"
8. Write a program that asks for a number and then uses a **while** loop to print all the odd numbers up to that value