



Cyber Security

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Today...

- For loop
- While loop



Looping (1)

- ▶ loops are for when you want to repeat some code multiple times
- ▶ there are two broad categories of loops:
 - ▶ **infinite** — loops that run forever (or until the program stops)
 - ▶ **finite** — loops that stop (within the program)
- ▶ there are two types of finite loops:
 - ▶ **counter controlled** — when you know, *a priori*, exactly how many times you want the code to repeat
 - ▶ **condition controlled** — when you don't know, *a priori*, exactly how many times you want the code to repeat, but you know that you want it to repeat until a certain *condition* is met
- ▶ there are two loop statements in Python
 - ▶ `for`
 - ▶ `while`
- ▶ you can actually use either statement to produce any of the categories/types, though some mode/statement pairings are more common than others

Looping (2): counter-controlled for

► example:

```
1 n = 100
2 print 'counting up to ' + str(n) + '...'
3 for i in range(0, n):
4     print str(i) + ' '
5 print 'done'
```

Looping (3): counter-controlled while

► example:

```
1 n = 100
2 print 'counting up to ' + str(n) + '...'
3 i = 0
4 while(i < n) :
5     print str(i) + ' '
6     i = i + 1
7 print 'done'
```


Looping (4): other facts about loops

- ▶ you don't always have to count up
- ▶ you can count down too
- ▶ you don't always have to count by ones
- ▶ you can increment or decrement by any integer
- ▶ **for** and **while** loops can be defined so that they don't execute (sometimes you might want to do this)
- ▶ don't forget to use the TAB character to *indent* the "body" (statements inside) of the loop

Questions and Answers

