Python Introduction: Control Flow

`for` loops in Python always iterate over something list-like:

In [2]:

```python
for i in range(10):
    print(i)
```

```
0
1
2
3
4
5
6
7
8
9
```

Note that Python does block-structuring by leading spaces.

Also note the trailing "`:`".

`if/else` are as you would expect them to be:

In [3]:

```python
for i in range(10):
    if i % 3 == 0:
        print("{0} is divisible by 3".format(i))
    else:
        print("{0} is not divisible by 3".format(i))
```

```
0 is divisible by 3
1 is not divisible by 3
2 is not divisible by 3
3 is divisible by 3
4 is not divisible by 3
5 is not divisible by 3
6 is divisible by 3
7 is not divisible by 3
8 is not divisible by 3
9 is divisible by 3
```

while loops exist too:

In [5]:

```python
i = 0
while True:
    i += 1
    if i**3 + i**2 + i + 1 == 3616:
        break

print("SOLUTION:", i)
```

SOLUTION: 15

Building lists by hand can be a little long. For example, build a list of the squares of integers below 50 divisible by 7:

In [6]:

```python
mylist = []
for i in range(50):
    if i % 7 == 0:
        mylist.append(i**2)
```

In [7]:

```python
mylist
```

Out[7]:

```
[0, 49, 196, 441, 784, 1225, 1764, 2401]
```

Python has a something called *list comprehension*:

In [8]:

```python
mylist = [i**2 for i in range(50) if i % 7 == 0]
```

In [9]:

```python
mylist
```

Out[9]:

```
[0, 49, 196, 441, 784, 1225, 1764, 2401]
```