Python Pt2: Decisions & Loops

Spring 2021
PCfB Class 5
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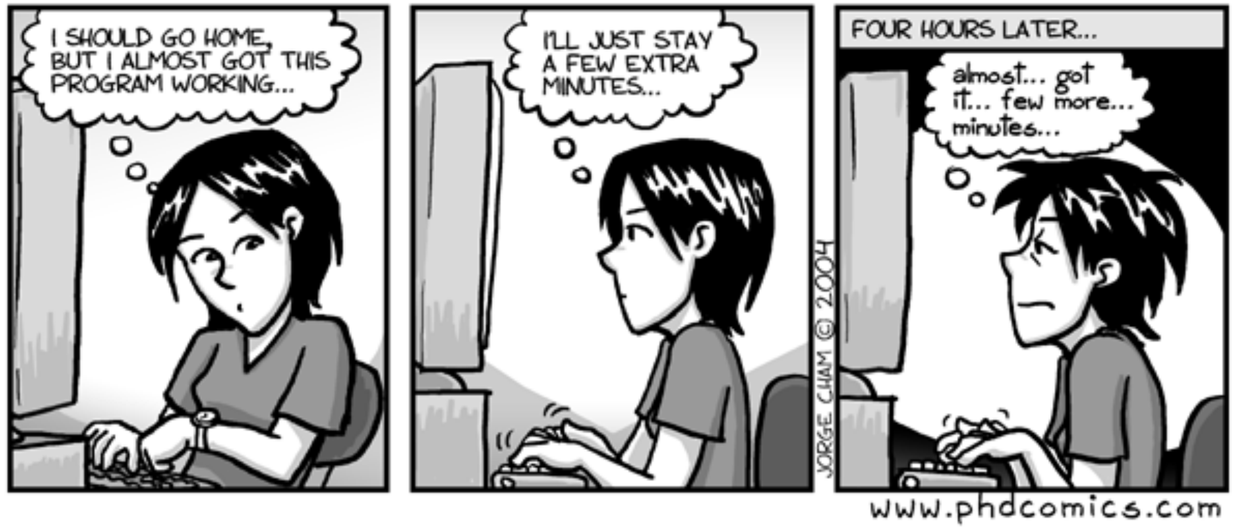
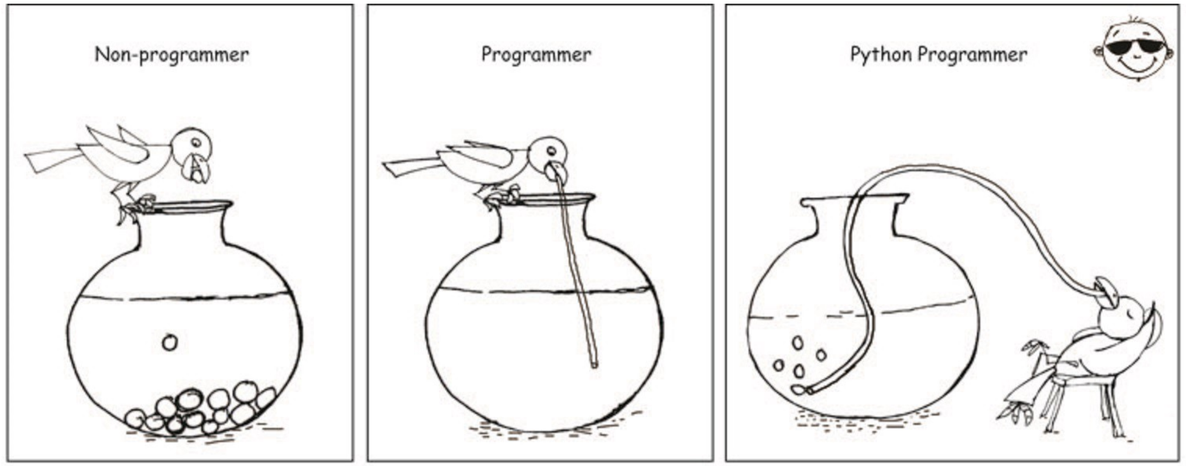




Outline

- Lists revisited
- Decisions (`if`, `elif`, `else`)
- `for` loops
- `while` loops

Lists revisited

Positive indexing

```
l = [1, '1', 'one', [1,2]]
```

Negative indexing

```
l = [1, '1', 'one', [1,2]]
```

List slicing

```
l = [1, '1', 'one', [1,2]]
```

`split()` method

`join()` method

Decisions

```
if

elif

else
```

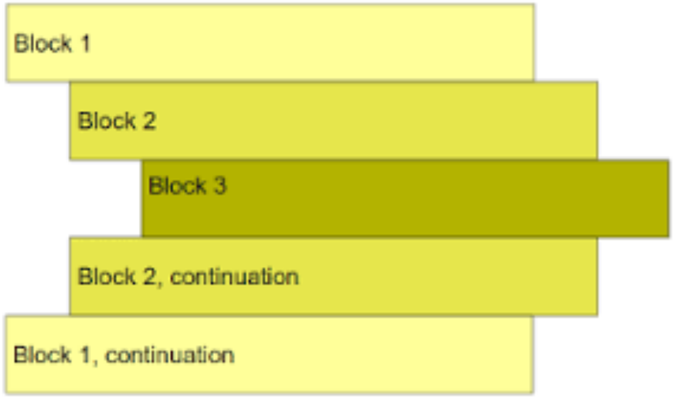
```
p = 0.0013

if p>0.05:
    print ("Insignificant")
elif 0.01<p<=0.05:
    print ("Significant")
elif 0.001<p<=0.01:
    print ("Highly Significant")
else:
    print ("Holy Cow!")

```

Indentation

- White space at the beginning of a line is used to define blocks of code
- Can use tabs, spaces or even a combination
- Best practice is to choose one and stick with it




```
2  for item in range(10):
3      print('I')
4      print('am')
5      print('a')
6      if item % 2 == 0:
7          print('funny')
8          print('and')
9          print('silly')
10     else:
11         print('dull')
12         print('and')
13         print('serious')
14     print('block')
15     print('used')
16     print('as')
17     print('example.')
```

Indentation shortcut

- Many text editors have shortcuts for quickly indenting blocks of code

Comparison operators (Table 9.1)

```
x  ==  y
x  !=  y
 x  >  y
 x  <  y
x  >=  y
x  <=  y
```

Logical operators (Table 9.2)

```
A and B
A or B
not B
(not A) or B
not (A or B)
```

`for` loops

`for` loops

```
pvalues = [0.67, 0.0003, 0.0013, 0.05, 0.76]

for p in pvalues:
    if p>0.05:
        print ("Insignificant")
    elif 0.01<p<=0.05:
        print ("Significant")
    elif 0.001<p<=0.01:
        print ("Highly Significant")
    else:
        print ("Holy Cow!")
```

`while` **loops**

```
int_list = list(range(50))            # Creates list with 50 integers
num_rmv = 4                           # # of items to remove from list in each iteration
itercount = 0                         # To keep track of the number of loop iterations
while len(int_list) >= num_rmv:       # Initiate while loop
    itercount+=1                      # Increment counter
    del(int_list[:num_rmv])           # Delete items from the int_list variable
    print (itercount, len(int_list))  # Print current iteration # and length of int_list
```

Initiate variables

While loop

Printed results

```
>>> int_list = list(range(50))
>>> num_rmv = 4
>>> itercount = 0
>>> while len(int_list) >= num_rmv:
...     itercount+=1
...     del(int_list[:num_rmv])
...     print (itercount, len(int_list))
...
1 46
2 42
3 38
4 34
5 30
6 26
7 22
8 18
9 14
10 10
11 6
12 2
```

Control statement within loops

- `break`: internal command to exit loop
- `continue`: end current loop iteration