CIS 122

Assignment and onward

Assignment recap

- We can store values in variables
  - x = 5
  - color = "purple"
- RHS must be a variable name
  - a
  - myVar
- LHS can be any expression
  - x = 1+2
  - color2 = "light" + color
- What does this do?
  - x = x+1

Assignment Quiz

num1 = 3	num1 → 4
string1 = "Hip "	string1 → "Hip "
num2 = num1 + num1	num2 → 6
string2 = string1 * num1	string2 → "Hip Hip Hip Hip "
num1 = num1 + 1	
string2 = string1 + string2	

Files

- We can store code in files
  - IDLE editor
  - **.py** extension
  - Make sure to run code (F5)

- Python executes each line in order
  - Performs any assignments
  - Executes all commands
  - Doesn't print out anything unless you ask

Printing Things

- If you want feedback from a code file, use print statements
  - print "Hello World"
  - print 1,2,3
- What can we print?
  - Any value (ints, floats, strings...)
  - Any variable (as long as it has been defined)
  - Any expression (that can be reduced to a value)
- print I hope this prints correctly
  - This will cause a syntax error
  - Why?
  - How could we fix it?

Comments

- Code is not just for computers
  - Humans need to read it too
- We might want to leave messages just for people
  - For other people
  - For you, a week from now
- Comments
  - `# Python ignores anything following a hash mark`
  - `cowName = "bessie" # Give name to cow`

Homework Overview

- 4 parts
  - Part 0 - Getting Started with Python
  - Part 1 - Getting to Know You
  - Part 2 - What's in a Squiggle
  - Part 3 - Some Quick Candy Calculation
- Why start counting at 0?
  - Computer Science convention
- Everyone has done part 0
  - (I hope)

Homework Overview

- Part 1 - Getting to Know You
- Existing code prints out empty info sheet

```
>>> ================================ RESTART ================================
>>>
Welcome to Python
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Name:
Year:
Major:

Why are you taking this class?

What do you hope to take away from this class?

Tell me something interesting about yourself.

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>>
```

Homework Overview

- Part 1 - Getting to Know You
- Existing code prints out empty info sheet

```
>>> ================================ RESTART ================================
>>>
Welcome to Python
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Name:  Greg Bickerman
Year:  Instructor
Major: Computer Science

Why are you taking this class?
I love teaching computer science!

What do you hope to take away from this class?
I want to learn to better convey computer science
topics and techniques to students new to programming.

Tell me something interesting about yourself.
I'm left handed.
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
>>>
```

Homework Overview

- Part 2 - What's in a Squiggle
- Two short questions about code from part 1
- Answer in a comment in your code
  - Don't need to print out your answer

```
# Question Prompt...
#
# Your answer as a comment...
#
```

Homework Overview

- Part 3 - Some Quick Candy Calculation
- I have some number of skittles of different colors
  - 7 orange skittles
  - 3 times as many green skittles as orange skittles
  - ...
- Use Python to figure out how many skittles I have of each color
- Print out the results
  - "I have 7 orange skittles"...

Homework Overview

- Part 3 - Some Quick Candy Calculation
- Don't just do the calculations by hand!
  - Use variables
  - Store information
- Why does it matter?
  - "Oops, I only had 6 orange skittles..."

A printing problem

- The print keyword writes values to the screen
  - print "Hello World"
  - print 1, 2, 3
- Python separates values with spaces

```
>>> print "Hello", "World"
Hello World
```

A printing problem

- What if I don't want that space?

```
>>> animal1 = "Cat"
>>> animal2 = "Dog"
>>> print animal1 + animal2
CatDog
```

- Easy for strings, but what about integers?

```
>>> num1 = 12
>>> num2 = 34
>>> print num1 + num2
46
```

A printing problem

- If only we could convert integers into strings...
  - Here's a tool we can use

```
>>> str(12)
'12'
```

- Now, how could we solve our printing problem?

```
>>> num1 = 12
>>> num2 = 34
>>> print str(num1) + str(num2)
1234
```

My first function

- str is a **function**
  - Input / Output machine
  - A value goes in
  - A string comes out

```
>>> str(12)
'12'

>>> str(3.14)
'3.14'

>>> str('pi')
'pi'
```

Anatomy of a Function

Function Name Argument / Parameter

str(12)

Parentheses

Functions

- Here are some other functions
  - int(x) - returns the integer version of x
  - float(x) - returns the float version of x
  - abs(x) - returns the absolute value of x
  - round(x) - returns the whole float closest to x
  - max(x,y) - returns the larger of x and y

- Functions can take multiple arguments

Functions

- What can you put in a function?
  - values
  - expressions
  - variables
  - results from other functions!
- What does this return?

```
>>> abs(round(-7.9))
```

- Use a series of functions to convert '-42' to '42'