Introduction to Python

Michelle Torres

August 7, 2016

Course Overview

- Michelle's office hours (277):
  - Officially one hour after every class meeting
  - Feel free to stop by any time I'm in
  - Email questions or if you want to meet
- Homeworks:
  - Will be about 6 homework assignments
  - Will be due Thursday and Monday (end of day)
  - Can work together, but each keystroke should be your own
  - All work must be done on git – commit often with comments
  - Direct all questions about grading, due date, etc. to Erin
- Poster session TBD

GOALS

- Learn Python
  - Web scraping, APIs, data structures, etc.
- Transferable skills to other languages
  - Ruby, SQL, Perl, programming logic
- Send a signal!

Quiz (!)

- Please go to:
  - http://smtorres.org/quiz1.html
  - http://smtorres.org/quiz2.html

Syntax

- Object types
  - String
  - Int
  - Float
  - List
  - Tuple
  - Dictionary
- Conditionals
- Loop
- Functions

STRINGS

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```
>>> name='Michelle'
>>> age='29'
>>> intro="Hi my name is "+name+".\nI'm "+age+" years old."
>>> intro
>>> print intro
>>> new_intro = """Hello!
... I'm Michelle.
... What's up?"""
>>> new_intro
>>> print new_intro
```

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```
>>> intro.split(".")
>>> new_intro.split('\n')
```

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```
>>> wustl = 'WashingtonUniversity'
```

- Let's check how the characters are positioned...

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
W	a	s	h	i	n	g	t	o	n	U	n	i	v	e	r	s	i	t	y
-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1

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```
>>> wustl[2:]
>>> wustl[-2:]
>>> wustl[:2]
>>> wustl[:-2]
>>> wustl[::2]
>>> wustl[::-2]
>>> wustl[::3]
>>> wustl[1:8]
```

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>>> [letter for letter in name]
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```
>>> myletters=[letter for letter in intro]
>>> ''.join(myletters)
>>> '\n'.join(myletters)
```

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>>> five+=1
>>> five
>>> five/=3
>>> five
>>> five-=2
>>> five
```

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>>> 12.0/5
>>> float(7)
>>> type(2.*8)
```

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>>> myletters.pop(1)
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```
>>> tup=(1,6,5,'Apple')
>>> tup[1]
>>> tup[1]=9
>>> tup.append(9)
>>> (a,b) = (1, ['I', 'Like', 'You'])
>>> a
```

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- These are particularly useful when we start defining classes (next class)

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  - Even an empty line with spaces can cause errors

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```
>>> even_numbers=[]
>>> for i in range(1,10):
...     if i%2==0:
...         even_numbers.append(i)
...
>>> for letter in 'word': print letter
...
>>> sum([.05**i for i in range(1,10)])
>>> while len(myletters)>1:
...     myletters.pop()
...
```

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- A while loop can always do what a for loop does, but syntax is simpler

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>>> addSquares(3,4)
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- Change the Fibonacci code to find first *n* numbers of sequence