python

it loves you too

background

- previous coding experience

- previous Python experience

syntax

- basically pseudocode

- whitespace matters: **use spaces not tabs**

- lots of built-in functionality - try and do things "pythonically" (see `general/style.md`)

running programs

Interactive

```
$ python
>>> print 'Hello, friends! :D'
'Hello, friends! :D'
```

From a file

```
$ python file.py
Hello, friends! :D
```

variables, yo

```python
# no type declarations
x = 3
print x
# output: 3

# types aren't static
x = 'I\'m a string now!'
print x
# output: I'm a string now!
```

data structures

- 2 big ones

  - **lists:** basically arrays but easier

  - **dictionaries:** map keys to values. you'll see

arrays are for losers

- we use "lists" in Python

- have dynamic size

- can hold many types of objects

- indexing + slicing are easy

arrays are for losers

```python
my_list = ['a', 'b', 'c', 'd', 'e']
my_list.append(24)
# my_list is now ['a', 'b', 'c', 'd', 'e', 24]

# print first element
print my_list[0]

# print last element
print my_list[-1]

# print elements at indices 1, 2, 3, and 4
print my_list[1:5]
```

dictionaries are cool too

- maps keys to values

- keys must be "hashable"

- values can be *anything* :o

dictionaries are cool too

```python
animals = {
    'sloths': 'cuties',
    'dogs': 'friendly as shit'
}

# add new keys
animals['cats'] = 'they\'re soft I guess'

# modify existing key/value pairs
animals['sloths'] = 'AMAZING'

print animals['cats']
# prints "they're soft I guess"
```

but even!

```
my_dict = {}

# add new keys
my_dict[(1,2)] = True
```

for loops are different

c:

```c
int myArray[3] = {18, 21, 35};
int i;
for (i = 0; i < 3; i++) {
    int elt = myArray[i];
    // do stuff with elt
}
```

python:

```python
my_list = [18, 21, 35]
for elt in my_list:
    # do stuff with elt
for i in xrange(len(my_list)):
    # do stuff with the index
```

iterate over dicts!

```python
spirit_animals = {
    'nikhil': 'monkey',
    'mark yao': 'pikachu'
}

# iterate over keys
for key in spirit_animals:
    val = spirit_animals[key]
    print '{0}\'s spirit animal is {1}'.format(key, val)

# iterate over keys AND values
for key, val in spirit_animals.iteritems():
    print '{0}\'s spirit animal is {1}'.format(key, val)
```

functions

```python
def crash(car, other_car):
    s = '{0} totally smashed into {1}!'.format(
        car, other_car)
    return s

crash('Lambo', 'BMW')
# returns 'Lambo totally smashed into BMW!'
```

importing things

- Python comes with lots of libraries

- you can use pip to install more (next week)

- importing and using is super easy

importing things

```python
import datetime

# now = today's date
now = datetime.date.today()

# print current year
print now.year

# print current date
print '{0}/{1}/{2}'.format(
    now.month, now.day, now.year)
```

How to Learn Python

- resources beyond us

- Google

- https://wiki.python.org/moin/BeginnersGuide

- http://www.learnpython.org/