**What is Python**

* Multipurpose language
  + Scripting
  + Object Oriented Programming
* 2.x vs 3.x
* Capabilities
  + Django
  + Dropbox
  + YouTube
  + Dropbox
  + EventBrite
* *NOT* ArcObjects
  + ArcObjects is the term for the Software Development Kit (SDK)
    - .NET SDK
    - Java SDK
  + Provides access to the geoprocessing capabilities of ArcGIS at a programmatic level

**Python and ArcGIS**

* Evolution from VBA
* ArcObjects, .NET SDK vs Python
* Future of Python with ArcGIS

**Examples**

* Python script in toolbox
  + AddressErrors
  + Huff Model
* Interpreter
  + ArcGIS
  + IDLE
* Text editor
  + Notepad++
  + Atom
* IDE
  + PythonWin
  + PyScripter
* Python Anywhere (pythonanywhere.com)
  + Online python interpreter
  + Hosting
  + Tutorials
  + Free beginner account

## Quick Gotcha

* Indented code vs curly brackets
* Be consistent

**Demo**

* Save Files
  + Text file (code.txt)
    - Includes prompts and output
    - More of a record of actions
  + Python file (code.py)
    - Only python code is included
    - Reusable script
* Load File
  + Run and view output
  + Notice on output of print statement is displayed
* Return value vs print
  + Return value is what is returned from a statement
    - For example arcpy.GetInstallInfo() returns a dictionary
    - We assigned that return value to data
    - In the console, the return value is shown after a statement is run
    - When the statement is run as part of a script, the return value is not shown
  + The print is used to display values to the screen in a script

## Help

* Google
* [docs.python.org](http://docs.python.org)
* Start Menu > All Programs > ArcGis > Python 2.7 > Python Manuals

**Data Types**

* Number
  + Integer 1, 2, 3, 4
  + Float 1.2321, 0.8474, 10.0
* Sequence
  + String (sequence of characters)
  + List [1, 2, 3] *mutable*
  + Tuple (1, 2, 3) *immutable*
  + Dictionary
    - Key Value Pairs
    - {'key': 'value', 'key': 'value'}
    - The return value from arcpy.GetInstallInfo()

## Numbers

### Start with a demo

### Integers

* Anything without a decimal
* Don't worry about integer vs long integer in Python

### Float

* Floating point number (double)
* Precision varies based on size of number
* Conversion
  + int(17.9), int(round(17.9))
  + float(17)

## Sequences

### List

### Tuple

### Strings

* String are a sequence of characters
  + Common sequence fuctions will work with strings
* Quotation Concepts and New Line Concepts
  + Can be specified using single or double quotes
  + Escape sequences
  + Defining a raw string (r"blah blah blah")
  + Defining a new line
* Demo

## Dictionaries