



# WiA Python Workshop

Amelia Mangian  
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# Outline

- A Brief History of Python
- How to use Python
- Numpy Demo
- Working examples
  - Importing
  - Writing a function
  - Reading and writing a FITS file
  - Plotting!!!
  - Using dataframes (kind of)



# Python History

- Created by Guido van Rossum
- Released in 1991
- Dynamically typed
  - Doesn't need to be compiled
- Contains over 130,000 packages to be used
- Used by major companies and science groups
  - Google, Facebook, Spotify, Wikipedia
  - NASA, CERN
- Installed on most Linux and Mac machines out of box



# How to Use Python

- Numerous ways to use Python
  - Command Line (please don't do actual work this way)
  - Run a script in terminal with python or in ipython
  - Use anaconda/spyder
  - Use Jupyter Notebooks
- Focus today on Jupyter
- Write code using vim, text editor (textmate, etc.) or in Jupyter



# Importing

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```
import <package>
```

```
import <package> as <shorthand>
```

```
from <package> import function (as <shorthand>)
```

```
from <package> import * (imports all functions from the package)
```



# Basic syntax

Addition -- (+)

Subtraction -- (-)

Multiplication -- (\*)

Division -- (/)

Exponent -- (\*\*)



# Basic Syntax

If/else statements:

if 'abc' in word:

print(word)

else:

count += 1

For/while loop:

for num in numbers:

print(np.multiply(num,5))

while x < 10:

print(np.divide(x,10))



# Basic Syntax

Calling a function:

`<package>.<function>`

e.g.

`np.append(array, num)`





# Basic Syntax

Writing a function:

```
def <function>(variables):
```

```
    stuff = other_stuff + random_stuff
```

```
    return stuff
```



# Examples

[https://github.com/ameliamangian/wia\\_python\\_workshop](https://github.com/ameliamangian/wia_python_workshop)



# Resources

<https://www.codewars.com/>

<https://www.learnpython.org/>

<https://www.codecademy.com/learn/learn-python>

<https://thepythonguru.com/>