



RED RIVER COLLEGE

WHAT WE'RE DOING IS WORKING.

ACE Technology Camp

Introduction to Python for Secret Agents

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What is Python?

- Python is an incredibly powerful, yet simple to learn object oriented programming language
- It's not just for scripts like some people believe, you can write massive complex applications with it!
 - ◆ Desktop apps
 - ◆ Web apps
 - ◆ Server apps
- The data science and machine learning industry around the world uses Python, as well as many other companies for many different purposes

Why Learn Python?

- Python is a cross platform language
 - ◆ This means you write code once, and deploy it to many different operating systems (Windows, Linux, Mac)
 - ◆ This saves a lot of development time, since you don't need to create and debug multiple versions of your program for different systems
- It is incredibly easy to learn and is fast becoming a global standard in universities and colleges
- There are a lot of Python related jobs available in the market

Basic Data Types

- Integer (int), whole number of ANY length
 - ◆ `x = 10`
- Float (float), floating point number with decimals
 - ◆ `x = 3.1415`
- String (str), text of ANY length
 - ◆ `name = "Gru Badguy"`
- Boolean (bool), true or false, yes or no, 1 or 0
 - ◆ `done = True`

Advanced Data Types – Lists

- List (list), stores any mixture of types, use square brackets
 - ◆ `mylist = [1, 2, 3, "Fun", False]`
 - ◆ `mylist = []`
- To access or change items, use index which starts at 0
 - ◆ `mylist[0] → 1`
 - ◆ `mylist[0] = 99`
- To add items to a list, use the append method
 - ◆ `mylist.append(77)`
- To delete items use del function
 - ◆ `del mylist[3]`

Advanced Data Types – Tuples

- Tuple (tuple), stores any mixture of types, use round brackets
 - ◆ `mytup = (1, 2, 3, "Fun", False)`
- To access items, use index which starts at 0
 - ◆ `mytup[0] → 1`
- Tuples are basically a read-only list, once created you can't add, remove or change items

Advanced Data Types – Dictionaries

- Dictionary (dict), stores key value pairs, using curly brackets
 - ◆ `mydata = {"a": 1, "b": "Fluffy", "c": False}`
 - ◆ `mydata = {}`
- To access or change items, use the key
 - ◆ `mydata["b"] → "Fluffy"`
 - ◆ `mydata["c"] = True`
- To add new items, just create a new key
 - ◆ `mydata["z"] = 3.1415`

Advanced Data Types – Sets

- Set (set), stores unique values, uses curly brackets
 - ◆ `myvals = {1, 2, 3, 4, 5}`
 - ◆ `myvals = set()`
- You can't access set items using index or keys
- To add new items, use the add method
 - ◆ `myvals.add(3.1415)`
- Sets have some special methods like union, difference & intersection that let you manipulate sets

Control Structures – If Statement

```
if x >= 77:
```

```
    print("x is greater than or = to 77")
```

```
elif x == 99:
```

```
    print("x is equal to 99")
```

```
elif "a" in rainbow:
```

```
    print("Rainbow has an 'a'")
```

```
else:
```

```
    print("None of the conditions were true!")
```

Control Structures – For Loops

```
for i in range(10):  
    print(i)
```

```
mydata = [1, 2, 3, 4, 5]  
for x in mydata:  
    print(x)
```

Control Structures – While Loops

```
sum = 0
```

```
while sum < 10:
```

```
    sum = sum + 1
```

```
done = False
```

```
while not done:
```

```
    print("Repeat myself forever...or maybe just once?")
```

```
    done = True
```

Resources

- Python online editor
 - ◆ <https://trinket.io/python3>
- Secret Agent Chat Project
 - ◆ <https://projects.raspberrypi.org/en/projects/secret-agent-chat>
- Raspberry Pi Python Projects
 - ◆ <https://projects.raspberrypi.org/en/projects?software%5B%5D=python>
- Python desktop editors
 - ◆ <https://codewith.mu/>
 - ◆ <https://code.visualstudio.com/>
- Python tutorials
 - ◆ <https://hourofpython.com>

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