#CodeYork

Handout 1: Introduction

Primitive Data Types 1

- Words and letters are strings (str)
  - `'egg'  "spam"`
- Numbers with a decimal point are floating point numbers (float)
  - `124.0  -0.123`
- Numbers with no decimal point are integers (int)
  - `1  124  0  -5`

Primitive Data Types 2

- Booleans give us logic
  - `True` `False`
  - Must be capitalized!
- Some things are nothing
  - `None`
  - Similar to “null” in Java.

Operators and Conditionals

- Arithmetic is nearly how you think (see exercises)
  - `1 + 1 - 4 * 3 / 2 ** 2`
- Booleans can be combined
  - `True and False` `True or False` `not False`
- Conditionals let us check for truth
  - `1 == 1` `1 > 1`

Variables and Mutability

- Variables allow you to store values
  - `x = 5, y = "hey"`
- Python variables can hold anything
- Variables are mutable
  - `x = x + 1` (x becomes 1 greater than before)
  - `x += 1` (shorthand for above)

If Statements

- These are the most common control structure you will encounter

```
if foo == 3:
    print('Variable foo was 3!')
else:
    print('Variable foo was NOT 3!')
```

Note: The else clause is optional.

Lists and Indexing

- Lists can hold several items, and remember their order
- Lists are zero-indexed

```
>>> ls = [1, 2, 'hello', 3.4]
>>> ls[0]
1
>>> ls[2]
'hello'
```

Note: Lists of length n have elements 0 through n-1.

Splicing Lists

- Python allows you to easily take part of a list

```
>>> ls = [1, 2, 'hello', 3.4]
>>> ls[1:3]
[2, 'hello']
>>> ls[0:4]
[1, 2, 'hello', 3.4]
>>> ls[::-1]
[3.4, 'hello', 2, 1]
```