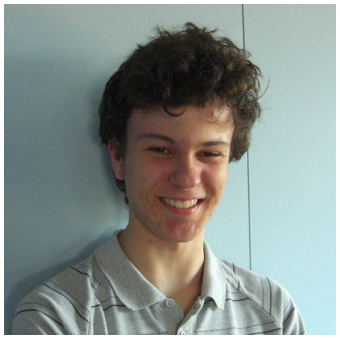
#CodeYork

Session 1: Introduction

Welcome



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We'll be using Python 3.6

Interpreted scripting language

Simple and readable

The Schedule

1. **Introduction**
2. Functions and Control
3. Recursion and Examples
4. Two Player Games

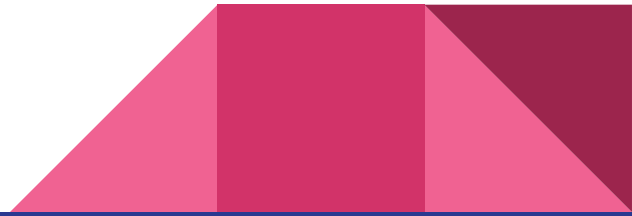
Part 1: Types, Operators, and Variables

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.

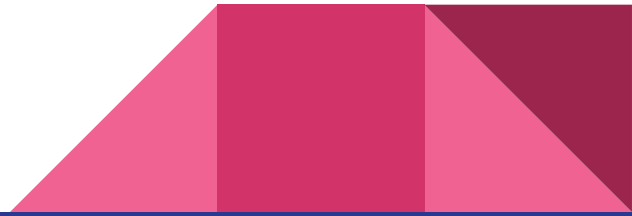


Operators and Conditionals

- 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)



Course Website

https://york.gjcampbell.co.uk/

Task 3

$$2 + 3 * 5 = 2 + (3 * 5) = 2 + 15 = 17$$

$$1 - 3 + 5 = (1 - 3) + 5 = -2 + 5 = 3$$

$$2 * 3 ** 2 = 2 * (3 ** 2) = 2 * 9 = 18$$

Task 4

```
not (False and True)     = not False          = True

(not True) and True      = False and True     = False

3 and 4 = 4              'Foo' or 100 = 'Foo'
```

Part 2: If Statements and Lists

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!')
```

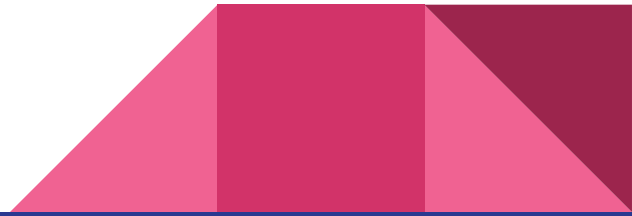
Note: The else clause is optional.

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'
```

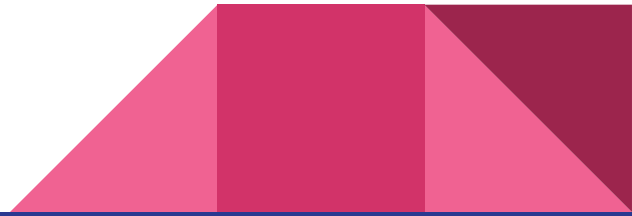
Note: Lists of length n have elements 0 through n-1.



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]
```



Go write code!

Task 2

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

Task 3

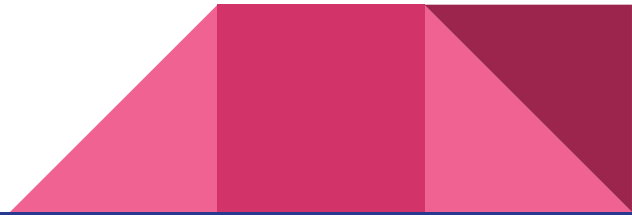
```
>>> ls = [2, 4, 6, 8, 10]
>>> if len(ls) > 3:
        print('hi')

hi
```

Summary

- Today, we have looked at:
  - Primitive Data Types (Strings, Floats, Integers, Booleans)
  - Operators and Conditionals (+, -, /, *, **, ==, !=, >, <)
  - Variables and Mutability
  - If Statements
  - Lists and Indexing
  - Splicing Lists

Questions? Speak up now!



Thanks!

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