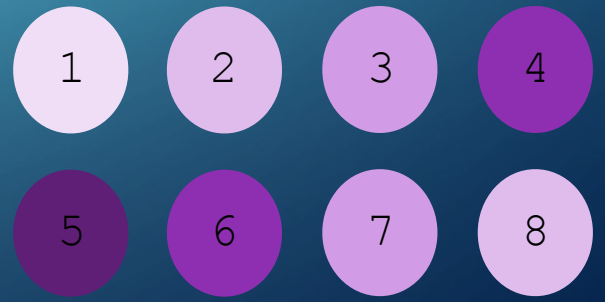
BEGINNERS' PYTHON - WEEK1

LEWIS GAUL

ST EDMUND HALL

4TH YEAR MATHEMATICS

LEWIS.GAUL@SEH.OX.AC.UK



COURSE OUTLINE

- Installation & setup
- Introduction to data types
- Introduction to if statements and loops
- Using built-in functions, defining new functions and using them
- Using libraries – time, maths, GUI
- Introduction to classes
- Creating and using your own classes
- Steps to make a game

LEWIS.GAUL@SEH.OX.AC.UK

CHARACTERISTICS OF PYTHON

- One of the most widely used languages
- Duck Typing – "If it walks like a duck and quacks like a duck, then it must be a duck."
- Object Oriented
- High-level language (easier to use than languages like C)
- Large and comprehensive standard library
- Not particularly fast compared to other languages (often not a problem)

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INSTALLATION

- python.org/downloads
- Click ‘Download Python 3.6.x’
- Check you have it installed correctly: open a command line…
- (Command Prompt on Windows/Terminal on a Mac/Shell on Linux), type in `python` and hit enter

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WHICH TEXT EDITOR?

- Python IDLE
- Sublime Text
- Notepad++
- Not TextEdit (Mac)

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SOME PYTHON DATA TYPES

- **`int`** – integer e.g. `5`, `-67`, `0`
- **`float`** – floating point number (like a decimal) e.g. `1.3`, `-700.0`, `0.03141`
- **`str`** – string/text e.g. `"hello"`, `"5 ducks?!"`
- **`boolean`** – Only examples are `True` and `False`
- **`list`** – e.g. `[1, 2, 3]`, `["hi", "hello"]`, `[]` (empty list)
- **`tuple`** – more rigid list e.g. `(1.0, 0.1, -2.0)`, `("hi", "hello")`
- **`dict`** – dictionary/map containing key-value pairs e.g. `{1:"hi", 2:"hello"}`

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BASIC OPERATIONS

Printing:

```
print(x)
print("hello")
print("value is: ", value)
```

- Assignment operator is "=" e.g. `variable = 3 + 5`,
  `my_string = "yay Python!"`
- What happens if you add two strings or two lists?
- Integer division: `9 // 4` (returns `2`)
- Modulo (remainder after dividing): `x = 5 % 3`
- Shorthand adding/subtracting etc.: `x += 3`
- Powers: `x = 3**(-2 + 5)`

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CHALLENGE 1

- Go to github.com/LewisGaul/python-tutorial, download challenge1.py
- Work out how the code works (try adding in some print statements)
- Write comments with '#' to explain how it works
- Can you think of any other (better?) ways to write it?
- When you understand it all, try modifying the code to achieve the challenge
- Try to use sensible variable names

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