

# Programming workshop: a very brief introduction

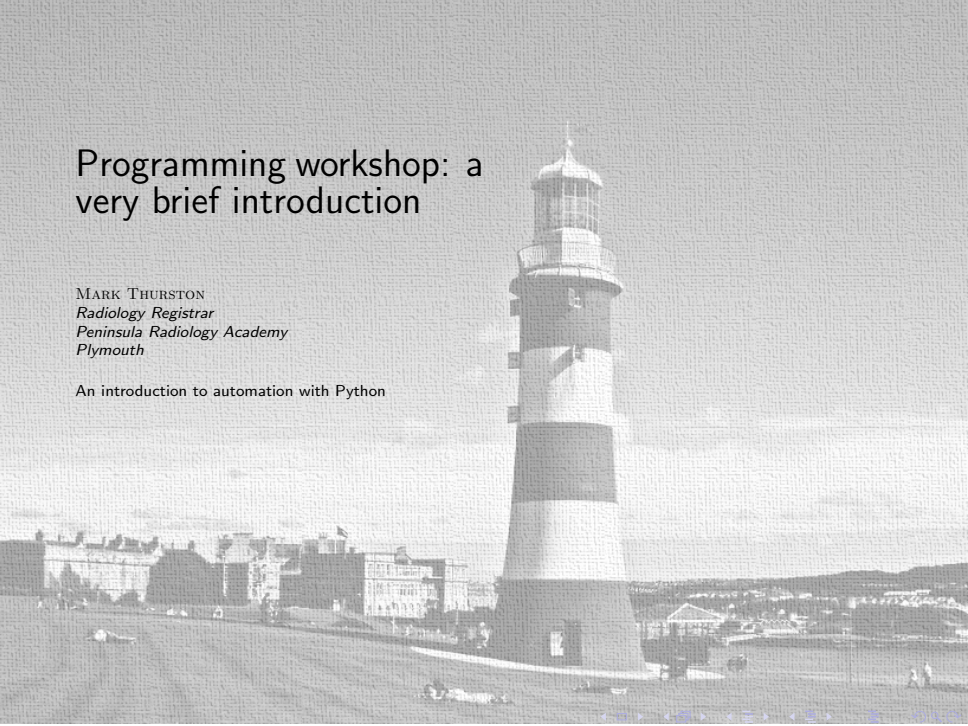
MARK THURSTON

*Radiology Registrar*

*Peninsula Radiology Academy*

*Plymouth*

An introduction to automation with Python



# Session aims

By the end of this session, you will be able to:

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- ▶ Part 2: Practice
  - ▶ set up a Python environment
  - ▶ run some pre-written example programs
  - ▶ Write your own simple example programs
- ▶ questions welcome throughout



- ▶ Python is completely free to run on your computer without restrictions
- ▶ no disadvantages to installation
  - ▶ no privacy concerns I'm aware of
- ▶ download link:
  - ▶ <https://www.python.org/downloads/>
- ▶ 64-bit version should run on all reasonably modern computers
  - ▶ try the 32-bit version if unsuccessful

# Starting the Python interpreter

Getting started with the Python interpreter

- ▶ Applications  $\Rightarrow$  Utilities  $\Rightarrow$  Terminal
- ▶ type *“python3”* at the \$ prompt

- ▶ Which function do you need?

```
# full definition  
print( *objects, sep=' ', end='\n',  
file=sys.stdout, flush=False)
```

```
# most useful part  
print( *objects )
```

- ▶ open a terminal window and start the Python interpreter
- ▶ hint: *type "python3"*

```
Python 3.6.3 (default, Oct  3 2017, 21:45:48)
[GCC 7.2.0] on linux
Type "help", "copyright", "credits" or "license"

>>> print("hello, world")
```

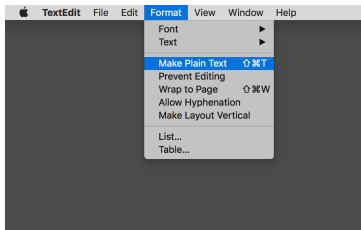
- ▶ You have just run “hello world” *interactively*
- ▶ Now we are going to use a *text editor* to save it as a program so you can run it whenever you like
- ▶ Many text editors are available (beyond the scope of this short presentation)
  - ▶ TextEdit is the basic editor included with macOS
  - ▶ Notepad is similar on Windows



## ► Finder ⇒ Applications ⇒ TextEdit



- ▶ *Plain text mode* must be activated
- ▶ Format ⇒ Make plain text



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```
#!/usr/bin/env python3
```

```
print("Hello_world")
```

- ▶ Save the file as “helloworld.py”

- ▶ open a terminal window

```
# you should see your program in this list
```

```
$ ls
```

```
<file 1> <file 2> ... helloworld.py
```

```
# ensures the correct permissions to run
```

```
$ chmod +x helloworld.py
```

```
# run your program
```

```
$ ./helloworld.py
```

- ▶ allows you to track changes in your source code
- ▶ helpful when working on files with multiple people or in multiple places
- ▶ download link:
  - ▶ <https://git-scm.com/download/mac>

# Clone a “Git repo”

Getting more program examples from Git

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- ▶ more examples are available on Github:

```
git clone https://github.com/mdvthu/Python-101
```

## Resources: books

Learning resources available on the internet

- ▶ Automate the boring stuff with Python:  
<https://automatetheboringstuff.com/>
- ▶ Another free online tutorial:  
<https://python-textbok.readthedocs.io/en/1.0/>

- ▶ Massive open online courses: some free, some cost
  - ▶ EdX:  
`https://www.edx.org/course?search\_query=python`
  - ▶ Coursera: `https://www.coursera.org/courses?languages=en&query=python&userQuery=python`
  - ▶ Udacity: `https://eu.udacity.com/`
  - ▶ udemy `https://www.udemy.com/`



# Resources: practice to improve your skills

Thousands of resources are available

- ▶ coding websites
  - ▶ <https://www.hackerrank.com/domains/python>
  - ▶ <https://www.codecademy.com/tracks/python>
- ▶ open access data
  - ▶ <https://data.gov.uk/>
- ▶ read other code on <https://github.com>
- ▶ contribute to an open source project
  - ▶ Horos
  - ▶ Orthanc
  - ▶ OpenCV
  - ▶ Python