

John Romero Programming Proverbs

- 1. “No prototypes. Just make the game. Polish as you go. Don’t depend on polish happening later. Always maintain constantly shippable code. (Large teams require more planning though.)”
- John Romero, “The Early Days of Id Software - John Romero @ WeAreDevelopers Conference 2017”

The first lecture

- this module consists of two pieces of coursework
 - in the first term, [Missile Command](#)
〈CS2S566_CW1P1M_Cover_PRCW_PRACTCW1.pdf〉
implemented in Python3 and Pygame
 - in the second term, a map editing tool for a tablet implemented in Python3
- both pieces of coursework are worth 50%

Access to the software in this module

- in this module Python3 will be taught on the GNU/Linux operating system
- there are two supported approaches to run Python3
 - firstly using vmware
 - secondly using the Raspberry Pi-4
- both give the same user level experience
- please see the other two components of the lecture this week for more details on either approach

Python

- Python is a scripting language

Python Gotha's

- blocks are defined by indentation!
- turn off tabs in your favourite editor
- in your own programs examples never create a name clash with a Python library module
- Python2 vs Python3
 - we will be using Python3

Python verses similar tools

- Python is a scripting language
 - it can be compiled if necessary to increase speed
- is more powerful than many other scripting languages, Tcl
 - applicable to larger systems development (games, net admin)
- has a much cleaner syntax than Perl
 - easier to maintain
- does not compete head on with Java
 - Java is a systems language like C++

Python and games

- examples of games which use Python `<http://wiki.python.org/moin/PythonGames>`

Python can be simple



```
#!/usr/bin/python3  
print("hello world")
```


Python Modules allow for problem decomposition

- similar to Modula-2

- myfile.py

```
#!/usr/bin/python3  
  
title = "hello world"
```

- foo.py

```
#!/usr/bin/python3  
  
import myfile  
print(myfile.title)
```

- when run prints hello world

Alternative import



bar.py

```
#!/usr/bin/python3  
  
from myfile import title  
print(title)
```



note that all python modules need to be saved as *name.py*



so in our example the module `myfile` was saved into a file called `myfile.py`

Python builtin types

- python contains many builtin types
 - use them..
- builtin objects make simple programs easy to understand
 - lists, dictionaries, exist, don't reinvent the wheel
- built in objects are more efficient than custom data types

Builtin objects



| | |
|--------------|--------------------------------------|
| numbers | 3.14159, 1234 |
| strings | 'spam', "fred's" |
| lists | [1, [2, 'three'], 4] |
| dictionaries | {'food':'spam', 'taste':'yum'} |
| tuples | (1, 'spam', 4, 'U') |
| files | text=open('/etc/passwd', 'r').read() |

Expression operators



or, and, not

logical operators (short circuit)

<, <=, >, >=, ==, <>, !=

comparison operators

x | y

bitwise or

z & y

bitwise and

x << y

shift left by y bits

x >> y

shift right by y bits

x[i]

indexing

x[i:y]

slicing

x.y

qualifying (imports)

x(y)

function calls

Strings

- concatenation via +
 - repeated via *
- - to write out the 3 times table