

## When is a module not a module?

- it is often useful to create a module
  - for yourself and others to use in the future
  - to subdivide the large problem set into a number of smaller modules
  
- sometimes a module might be able to operate as a stand alone program
  - consider autoftp could be organised as a module


## When is a module not a module?

```
if __name__ == "__main__":  
    main()
```

■ which means run the function `main` if this module is explicitly invoked by the user

■ note that it is not run if this module was imported

## Example times module



```
#!/usr/bin/python3

import sys

def multiplyby10(value):
    return value+"0"

if __name__ == "__main__":
    if len(sys.argv) == 2:
        print("testing the times module")
        print(multiplyby10(sys.argv[1]))
```

## Example program



```
#!/usr/bin/python3

import times, sys

if len(sys.argv) == 2:
    print("importing the times module")
    print(times.multiplyby10(sys.argv[1]))
```

## Example program

- note that the module times takes a string and adds a '0' to the left hand side
  - effectively multiply by 10
- note it also uses the `if __name__ ==` condition which only calls the multiply routine if this module was invoked as the main program by the user

## Example program

- ```
./prog.py 12
importing the times module
120
```

- ```
./times.py 12
testing the times module
120
```

- exercise for the reader, add a function to perform divide and modulus of a numerical integer string

# printf

- if any C programmer laments the lack of a `printf` function, you can roll your own:

- `mylibc.py`

```
#!/usr/bin/python3

import sys

#
# printf - keeps C programmers happy :-)
#

def printf (format, *args):
    sys.stdout.write (str (format) % args)
    sys.stdout.flush ()
```

- please create this file (module) as it will be very useful when you start the coursework

# printf

mytest.py

```
#!/usr/bin/python3

from mylibc import printf

printf ("hello world\n")
printf ("an int: %d\n", 42)
printf ("a float: %f\n", 3.1415927)
```

■ why does the output for a float differ from the constant value?



# printf



mytest2.py

```
#!/usr/bin/python3

from mylibc import printf

printf ("hello world\n")
printf ("an int: %d\n", 42)
printf ("a float: %f\n", 3.1415927)

printf ("a float: %19.19f\n", 3.1415927)
```

## Tutorial

- type in the printf example given during the lecture and check that it works
- create the file `mylibc.def` and also create the test programs
  - try running the test programs
  - you have created your first Python module `mylibc.def`
- try out any other examples from this weeks lecture notes