# Scripts and Modules

## Exercises

### Week 5

Prior to attempting these exercises ensure you have read the lecture notes and/or viewed the video, and followed the practical. You may wish to use the Python interpreter in interactive mode to help work out the solutions to some of the questions.

Download and store this document within your own filespace, so the contents can be edited. You will be able to refer to it during the test in Week 6.

Enter your answers directly into the highlighted boxes.

For more information about the module delivery, assessment and feedback please refer to the module within the MyBeckett portal.

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When a Python program is stored within a text file (i.e. a *script*), what suffix should be used for the filename?

*Answer:*

.py

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Is it necessary to use a special Integrated Development Environment (IDE) to write Python code in text files?

*Answer:*

No. It is not necessary to use a special Integrated Development Environment (IDE) to write Python code in text files

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When a *script* is executed from a file, are the results of evaluating expressions automatically displayed on the screen without the need of a print() function call?

*Answer:*

In Python, when a script is executed from a file, the results of evaluating expressions are not automatically displayed on the screen without using the print() function.

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What command would need to be typed in an operating system terminal window in order to execute a Python script called PrintNames.py?

*Answer:*

python PrintNames.py

What command would need to be typed in a terminal in order to pass the values "John", "Eric", "Graham" as *command line arguments* to the PrintNames.py script?

*Answer:*

python PrintNames.py John Eric Graham

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When a Python script wishes to access *command line arguments*, what **module** needs to be imported?

*Answer:*

To access command-line arguments within a Python script, you need to import the sys module. The sys module provides access to variables and functions related to the Python interpreter and its environment, including the list sys.argv, which contains the command-line arguments passed to the script.

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What is the data-type of the sys.argv variable?

*Answer:*

String data type

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What is stored within the first element of the sys.argv variable?

*Answer:*

Sys.argv specifically holds the name of the Python script itself, including the path to the script if it was executed from a specific location. For instance, if you run a Python script named example.py from the command line, sys.argv[0] will store the string 'example.py'.

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Use a text editor to write the *script* called PrintNames.py. This should display any *command line arguments* that were passed during execution.

Once complete, place your solution in the answer box below.

*Answer:*

import sys

# Display command-line arguments

for arg in sys.argv[1:]:

print(arg)

Improve the solution so it uses an if statement to check that at least one name was passed, or otherwise print a message saying “no names provided”. Place your improved solution in the answer box below.

*Answer:*

import sys

# Check if command-line arguments were provided

if len(sys.argv) > 1: # Checking if there are arguments excluding the script name (sys.argv[0])

# Display command-line arguments

for arg in sys.argv[1:]:

print(arg)

else:

print("No names provided")

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When using an import statement it is possible to provide an *alias* that can be used as an alternative name to access module content.

Write an **import** statement that imports the whole of the sys module, and renames it to my\_system.

*Answer:*

import sys as my\_system

Write a **from..import** statement that imports only the math.floor function, and renames it to lower

*Answer:*

from math import floor as lower

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What is stored in a *symbol-table*?

*Answer:*

In Python, the symbol table contains mappings of names to objects. When a variable is assigned a value, a function or a class is defined, or a module is imported, these names are stored in the symbol table along with references to the corresponding objects.

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Why is the following type of import statement generally not recommended?

from math import \*

*Answer:*

This is not recommended however, since there is high chance that clashes between imported and existing variable names will occur.

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When working in *interactive-mode* what convenient function can be used to list all names defined within a module?

*Answer:*

In Python's interactive mode, the dir() function can be used to list all names defined within a module or an object

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What is the value stored within the sys.path variable used for?

*Answer:*

In Python, the sys.path variable is a list that stores the locations where the Python interpreter looks for modules or packages when importing them. It is a list of directory names where Python searches for modules to import.

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When a program is being executed as a *script* what value is assigned to the special variable \_\_name\_\_?

*Answer:*

When a Python program is being executed as a script, the value assigned to the special variable \_\_name\_\_ is '\_\_main\_\_'.

What value is assigned to the \_\_name\_\_ variable when a program has been imported as a *module*?

*Answer:*

When a Python program is imported as a module into another Python script, the value assigned to the \_\_name\_\_ variable within the imported module is the name of that module.

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Why is it useful for a program to be able to detect whether it is running as a *script*, or whether it has been imported as a *module*?

*Answer:*

Detecting whether a Python program is running as a script or imported as a module is useful for controlling code execution. It allows conditional execution of specific code when the script is run directly, separating it from code meant for importing into other programs. This distinction enhances code organization, reusability, and facilitates testing and debugging.

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## **Exercises are complete**

Save this logbook with your answers. Then ask your tutor to check your responses to each question.