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.

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

Answer:

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

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.

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:

> No, when a *script* is executed from a file, the results of evaluating expressions are not automatically displayed on the screen without the need of a print() function call.

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

Answer:

> python3 PrintNames.py
> The given command would need to be typed in an operating system terminal window in order to execute a Python script called `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:

> python3 PrintNames.py John Eric Graham
> The given 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.

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

Answer:

> When a Python script wishes to access *command line arguments*, the sys **module** needs to be imported.

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

Answer:

> The data-type of the `sys.argv` variable is a list in Python.

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

Answer:

> The first element of the `sys.argv` variable stores the name of the script being executed.

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

# Loop through the command line arguments (starting from index 1 to skip the script name)
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 at least one name was provided as a command line argument
if len(sys.argv) > 1:
    # Print all the names passed as arguments
    for arg in sys.argv[1:]:
        print(arg)
else:
    # If no names were provided, print a message
    print("no names provided")
```

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
```

What is stored in a *symbol-table*?

Answer:

A symbol-table stores information about variables, functions, classes, and other symbols in a program.

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

```
from math import *
```

Answer:

Using from math import* is not recommended because it can cause name conflicts and make the code less clear.

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

Answer:

When working in *interactive-mode*, dir( ) function can be used to list all names defined within a module.

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

Answer:

The value stored within the `sys.path` variable is used to determine the list of directories .

When a program is being executed as a *script* what value is assigned to the special variable `__name__`?

Answer:

The value '__main__' is assigned to the special variable __name__.

What value is assigned to the `__name__` variable when a program has been imported as a *module*?

Answer:

When a program is imported as a module, the __name__ variable is assigned the value of the module's name (which is typically the name of the python file, without the .py extension).

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:

It is useful because it allows the program to run specific code when executed as a script, while avoiding that code when imported as a module. This makes the program reusable and prevents unnecessary code from running when used as a module.

Exercises are complete

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