# Functions

## Exercises

### Week 4

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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What must be done before a function that is not *built-in* to Python can be used in a program?

*Answer:*

Import them first

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Given the following import statement, how would a call to the sin() function be made?

import math

*Answer:*

angle\_in\_radians = 0.5

result = math.sin(angle\_in\_radians)

print(result)

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Given the following import statement, how would a call to the sqrt() function be made?

from math import sqrt

*Answer:*

number = 25

result = sqrt(number)

print(result)

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What is the name of the common library that is available with all Python distributions?

*Answer:*

Python Standard Library

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What keyword is used in Python to define a new function?

*Answer:*

def

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Write some Python code that defines a function called print\_header(msg). This should output the value provided by the ‘msg’ parameter to the screen (prefixed by five asterisk ‘\*\*\*\*\*’) characters.

*Answer:*

def printer\_header(msg):

header = “\*\*\*\*\*” + msg + “\*\*\*\*\*”

printer(header)

message = “Hello, World!”

print\_header(message)

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In the answer box below give an example of what the **docstring** may look like for the print\_header(msg) function.

*Answer:*

def print\_header(msg):

"""

Print a header with a message prefixed and suffixed by five asterisks.

Parameters:

- msg (str): The message to be displayed in the header.

Returns:

None. The function prints the header to the console.

Example:

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>>> print\_header("Important Message")

\*\*\*\*\* Important Message \*\*\*\*\*

"""

header = "\*\*\*\*\* " + msg + " \*\*\*\*\*"

print(header)

message\_to\_print = "Hello, World!"

print\_header(message\_to\_print)

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Where within a function definition should a **docstring** appear?

*Answer:*

After the function or method definition and before any code inside the function

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What statement should appear within a function’s code block to cause a specific value to be passed back to the caller of the function?

*Answer:*

return statement

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Write some Python code that defines a function called find\_min(a,b) that returns the smallest of the two given parameter values.

*Answer:*

def find\_min(a, b):

"""

Find and return the smallest of two given values.

Parameters:

- a (int or float): The first value.

- b (int or float): The second value.

Returns:

The smallest of the two values.

Example:

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>>> find\_min(5, 3)

3

"""

return min(a, b)

# Example usage:

result = find\_min(5, 3)

print(result) # Output: 3

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Given the following function definition, which of the *formal parameters* could be described as being a **default argument**?

def shouldContinue(prompt, answer=False):

# function body...

*Answer:*

answer

Provide two example calls to the above function, one which provides a value for the *default argument*, and one that does not.

*Answer:*

Example 1: Providing a value for the default argument

shouldContinue("Continue?", True)

Example 2: Not providing a value for the default argument

shouldContinue("Continue?")

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State why following function definition would **not** be allowed.

def do\_something(prefix="Message", prompt, answer=False):

# function body...

*Answer:*

All the parameters with default values must come after parameters without default values.

The parameter ‘prompt’ comes before the parameter ’answer’, and ‘prompt’ does not have a default value. This is not allowed because in a function call, if you provide values for the parameters, Python would not be able to distinguish whether you are providing a value for ‘prompt’or ’prefix’.

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What single character is placed directly before the name of a *formal parameter*, to indicate that a variable number of actual parameters can be passed when the function is called?

*Answer:*

Asterisk (\*)

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What commonly used built-in function, which displays output on the screen, can take a **variable number** of arguments?

*Answer:*

print()

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Is it valid for a function’s parameter name to be prefixed by two asterisk characters ‘\*\*’ as shown below?

def send\_output(\*\*details):

# function body...

*Answer:*

Yes, it is valid

If present, what does this prefix indicate?

*Answer:*

It indicates that the parameter will collect any additional keyword arguments passed to the function into a dictionary

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What is the name given to a small ‘anonymous’ function that must be defined using a single expression?

*Answer:*

Lambda

Give an example of such a function that calculates the *cube* of a given number (i.e. the value of the number raised to the power of three) -

*Answer:*

cube = lambda x: x\*\*3

number = 4

result = cube(number)

print(result)

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## **Exercises are complete**

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