# 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 module\_name

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

import math

*Answer:*

math.sin()

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

from math import sqrt

*Answer:*

math.sqrt()

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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 keyword is used in Python

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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 print\_header(msg):

# Output the header with five asterisks prefix

print("\*\*\*\*\*", msg)

# Example usage:

message = "Hello, this is a header!"

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 by five asterisks.

Parameters:

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

Example:

>>> print\_header("Hello, this is a header!")

Output: \*\*\*\*\* Hello, this is a header!

"""

print("\*\*\*\*\*", msg)

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

*Answer:*

Right after the definition of function, method, class, or module.

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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 (numeric): The first value.

- b (numeric): The second value.

Returns:

(numeric): The smallest of the two values.

"""

return min(a, b)

# Example usage:

result = find\_min(10, 5)

print("The smallest value is:", result)

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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 = False is the default argument.

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

*Answer:*

# Calling the function with a value for the 'answer' parameter

shouldContinue("Do you want to continue?", True)

# Calling the function without providing a value for the 'answer' parameter

shouldContinue("Do you want to 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:*

The issue is that the parameter “prompt” doesn’t have a default value, and it appears before the parameter “answer” which has a default parameter. This is not allowed in Python.

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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:*

star operator

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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:*

This indicate that the parameter is designed to collect additional keyword arguments 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 function

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:*

# Lambda function to calculate the cube of a number

cube = lambda x: x\*\*3

# Example usage

number = 4

result = cube(number)

print(f"The cube of {number} is: {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.