# 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:*

Before a function that is not ‘*built-in’* to Python can be used in a program we should define a function with the def keyword, then write the function identifier (name) followed by parentheses and a colon.

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

import math

*Answer:*

The following import statement, a call to sin () function be made:

result = 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:*

The following import statement, a call to the sqrt() function be made:

result =sqrt ()

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

*Answer:*

The name of the common library that is available with all Python distributions is ‘Standard Library’

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

*Answer:*

def keyword is used in python to define a new function.

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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:*

Some Python code that defines a function called print\_header(msg):

def print\_header(msg):

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

print\_header(“a 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:*

An example of what the **docstring** may look like for the print\_header(msg) function:

def print\_header(msg):

"""

This is a docstring for the print\_header(msg) function

Parameters:

msg: The message to be displayed in the header.

Example:

>>> print\_header("a message")

\*\*\*\*\* a message \*\*\*\*\*

"""

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

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

*Answer:*

A ‘docstring’ in should appear as the first statement inside a function, method, class, or module definition.

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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:*

To return a specific value to the caller of a function in Python, the return statement should be used.

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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:*

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

def find\_min (a, b):

return min (a, b)

result = find\_min (10, 5)

print(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:*

The formal parameter ‘answer’ could be described as being a ‘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:*

Two example calls to the above function, one which provides a value for the ‘default argument’, and one that does not are:

Result1 = should Continue ("Continue with the default argument false?")

Result2 = should Continue ("Do you not want to continue?", True)

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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 above function is not allowed in Python due to the incorrect placement of a parameter with a default value.

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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:*

The 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 is the asterisk (\*). This syntax is known as "unpacking" or the "splat" 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:*

The commonly used built-in function that can take a ‘variable number’ of arguments and displays output on the screen is ‘print ()’ in Python.

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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 for a function's parameter to be prefixed by two asterisk characters i.e. (\*\*).

If present, what does this prefix indicate?

*Answer:*

If present, this prefix indicates that the parameter is a special syntax in Python known as "\*\*kwargs," where "kwargs" stands for keyword arguments.

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

*Answer:*

The name given to a small ‘anonymous’ function that must be defined using a single expression is called a lambda function in Python.

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:*

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) -

cube = lambda x: x \*\* 3

result = cube (4)

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.