# 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, it must be defined or imported.

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

import math

*Answer:*

To call the sin() function,

math.sin(x)

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

from math import sqrt

*Answer:*

To call the sqrt(),

sqrt(x)

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

*Answer:*

Standard Library

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

*Answer:*

The keyword that is used in Python to define a new function is 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 print\_header(msg):

print(“\*\*\*\*\*”, msg)

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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 ("=" \* len(msg))

print (msg)

print ("=" \* len(msg))

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

*Answer:*

A docstring should appear immediately after the function definition and should be the first statement inside the function body.

For example;

def function\_name (parameters):

"""

This is where the docstring goes.

It should describe what the function does, its parameters, and return value.

"""

# Function code here

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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:*

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

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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):

return a if a < b else b

# Example usage of the function:

print(find\_min(5, 8)) # Output: 5

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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 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 shouldContinue function:

1. Call with a value for the default argument (answer=True):

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

2. Call without providing a value for the default argument (uses answer=False)

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 given function definition would not be allowed because default arguments must appear after non-default arguments.

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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 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:*

The commonly used built-in function that displays output on the screen and can take a **variable number** of arguments is 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 for a function’s parameter name to be prefixed by two asterisk characters ‘\*\*’ .

If present, what does this prefix indicate?

*Answer:*

The \*\* prefix in a function parameter indicates that the function can accept arbitrary 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 a 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:*

cube = lambda x: x \*\* 3

print(cube(3))

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## **Exercises are complete**

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