# Introduction to Programming

## Exercises

### Week 1

Prior to attempting these exercises ensure you have read thelecture notes and/or viewed the video, and also completed 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 is the name of the programming language that we will be using on this module? What version of the language are we using?

*Answer:*

We will be coding Python

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A computer program takes some *input*, performs some *processing* then…. what?

*Answer:*

It would then be printed.

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What generation of programming language is *machine code*?

*Answer:*

Machine code is known as a First Generation Language

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Which of the following is known as a second generation programming language?

* C++
* Java
* Assembly
* R
* Python

*Answer:*

Assembly is a second-generation programming language.

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State one problem associated with writing code in Assembly Language.

*Answer:*

Assembly language is difficult to become fluent with and not as widely used anymore.

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What generation of programming language is *Python*?

*Answer:*

Python is a Third Generation Language

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What is the purpose of a *compiler*?

*Answer:*

A compiler converts 3rd generation languages into an executable program.

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The Python interpreter uses an interaction model called **REPL**. What does this stand for?

*Answer:*

1. Read
2. Evaluate
3. Print
4. Loop

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Is it true that Python development always has to take place using *interactive-mode* within the Python interpreter?

*Answer:*

False

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What does the term IDE stand for?

*Answer:*

An IDE would be an Integrated Development Environment

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What is the main reason why programmers use *code libraries*?

*Answer:*

They can use pieces of code which they, or somebody else, has already created in order for them to save time and make their job a lot easier rather than re-typing it.

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The Python language is often used in the field of *data-science*. What other language specifically supports *data-science*?

*Answer:*

SQL and R would specifically support data-science.

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An expression within a programming language consists of *operands* and *operators*.

Given an expression such as: 20 + 10, which part of this is the *operator*?

*Answer:*

+ is the operator in this expression.

And, which part of this is the *operand*?

*Answer:*

20 and 10 are the operands.

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Within Python, what calculation is performed by the ‘\*’ operator?

*Answer:*

Multiplication

And, what calculation is performed by the ‘/’ operator?

*Answer:*

Division

And, what calculation is performed by the ‘\*\*’ operator?

*Answer:*

Exponentiation

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Using the information about expression evaluation provided in the related tutorial, evaluate each of the following expressions **in your head** and type the result in the answer boxes below. Remember that an operator precedence is applied, but can be overridden by the use of parentheses.

a) 100 + 200 - 50

*Answer:*

250

b) 10 + 20 \* 10

*Answer:*

210

c) 20 % 3

*Answer:*

2

d) 20 / (2 \* 5)

*Answer:*

2

e) 20 / 2 \* 5

*Answer:*

50

f) 10 \* 2 + 1 \* 3

*Answer:*

23

g) 5 + 10 \*\* 2

​​​*Answer:*

105

h) (10 + 2 / 2) + ((10 \* 2) \*\* 2)

*Answer:*

411

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Use the Python interpreter to input and then execute a simple Python expression that adds the three numbers 100.6, 200.72 and 213.3, then write the result in the answer box below.

*Answer:*

514.62

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Use the Python interpreter to input and then execute a simple Python expression that multiplies the three numbers 20.25, 100 and 23.9, then write the result in the answer box below.

*Answer:*

48397.5

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Use the Python interpreter to input and then execute a simple Python expression that divides the number 10 by 0, then write the result in the answer box below.

*Answer:*

This returns the following syntax error:

ZeroDivisionError: division by zero

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What type of error is typically easier to identify? A *syntax* error? Or a *logical* error?

*Answer:*

Syntax errors are easier to identify in comparison to logical errors as it typically causes the code to crash instead of it still run but have an incorrect end-product, as would occur with a logical error.

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What type of message is used by the Python interpreter to report run-time errors?

*Answer:*

Syntax

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What command can be used to exit the Python interpreter?

*Answer:*

exit()

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## **Exercises are complete**

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