# 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:*

The programming language is Python. The version is 3.11.0

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

*Answer:*

Then gives the Output.

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What generation of programming language is *machine code*?

*Answer:*

Machine Code is 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 known as a second-generation language.

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State one problem associated with writing code in Assembly Language.

*Answer:*

Writing code in Assembly Language takes a long amount of time and is difficult for humans to write in.

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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:*

The purpose of a compiler is to translate the code into assembly or machine code.

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

*Answer:*

REPL stands for Read, Evaluate, Print and Loop.

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

*Answer:*

No. It can be written in an IDE also.

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What does the term IDE stand for?

*Answer:*

IDE stands for Integrated Development Environment.

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

*Answer:*

The reason why programmers use code libraries is because they do not have to reinvent the wheel and write the code from the scratch that would take a lot of time.

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

*Answer:*

The language that supports data-science and statistics is R.

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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:*

The operator is the addition sign (+).

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

*Answer:*

The operands are the numbers 20 and 10.

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

*Answer:*

The \* operator performs multiplication.

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

*Answer:*

The / operator is for division.

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

*Answer:*

The \*\* is for 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:*

520.62

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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:*

Traceback

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:*

A syntax error Syntax errors are easier to identify because the errors are syntax mistakes compared to logical errors where the syntax is correct but the program was poorly implemented and occurs during run-time.

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

*Answer:*

As Traceback calls.

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What command can be used to exit the Python interpreter?

*Answer:*

Quit()

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## **Exercises are complete**

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