# 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:*

Python is a compiler, and we will be using the third generation programming language (3GL)

CPython interpreter

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

*Answer:*

Outputs the results of the processing of the inputs that is set by the programmer

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What generation of programming language is *machine code*?

*Answer:*

Machine code is first generation referring to binary

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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:*

Different CPU’s require different assembly languages meaning the code isn’t portable also programming is still fairly difficult and time consuming to when using a compiler

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What generation of programming language is *Python*?

*Answer:*

Python is a third generation programming language

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What is the purpose of a *compiler*?

*Answer:*

A compiler translates the easier to understand programming language into assembly/machine code

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

*Answer:*

we type commands they are ‘Read’ then ‘Evaluated’, the result is ‘Printed’ and then this process ‘Loops’ again.

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

*Answer:*

Interactive mode allows for rapid input and feedback of small snippet of code and provide help with code, python will scan the code automatically

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What does the term IDE stand for?

*Answer:*

Integrated Development Environment

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

*Answer:*

Code libraries are useful tools that can make a web developers job more efficient, they are pre written, reusable chunks of code that developers can use to create applications quickly and easily and avoid repetition of coding the same thing over and over again

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

*Answer:*

R a 4GL can be used for *data-science and statistics*

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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:*

Operands = numbers

Operators = +/-/x

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

*Answer:*

20 10

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

*Answer:*

\*= X

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

*Answer:*

/ = ÷

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

*Answer:*

\*\* = to the power

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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:*

2

f) 10 \* 2 + 1 \* 3

*Answer:*

23

g) 5 + 10 \*\* 2

​​​*Answer:*

105

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

*Answer:*

6 + 400 = 406

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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:*

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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:*

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

*Answer:*

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

*Answer:*

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What command can be used to exit the Python interpreter?

*Answer:*

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## **Exercises are complete**

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