Introduction to Programming

Exercises

Week 1

Prior to attempting these exercises ensure you have read the lecture 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.

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 version 3.10.8

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

Answer:

> output

What generation of programming language is *machine code*?

Answer:

> first generation programming language

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

- C++
- Java
- Assembly
- R
- Python

Answer:

> assembly

State one problem associated with writing code in Assembly Language.

Answer:

> assembly language is difficult of its complex syntax.

What generation of programming language is *Python*?

Answer:

> 3rd generation programming language.

What is the purpose of a *compiler*?

Answer:

> changes the programming languages source code into machine code.

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

Answer:

> Read-Eval-Print Loop

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

Answer:

> yes, because it allows us to write, process and execute the python code.

What does the term IDE stand for?

Answer:

> integrated development environment

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

Answer:

> perform significant tasks with modest amounts of code and help avoid "reinventing the wheel".

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

Answer:

> R

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:

> +(addition)

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

Answer:

> 20 and 10

Within Python, what calculation is performed by the '*' operator?

Answer:

> multiplication

And, what calculation is performed by the '/' operator?

Answer:

> divison

And, what calculation is performed by the '**' operator?

Answer:

> (exponentiation) i.e raise 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:

50

f) `10 * 2 + 1 * 3`

Answer:

23

g) `5 + 10 ** 2`

Answer:

105

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

Answer:

411

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

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

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:

> zero division error or runtime error

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

Answer:

> syntax error

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

Answer:

> logical error

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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.