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.

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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.python3x

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

*Answer:*

Output

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What generation of programming language is *machine code*?

*Answer:*

First generation of programming langauge.

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

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

*Answer:*

Assembly

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State one problem associated with writing code in Assembly Language.

*Answer:*

One problem associated with writing code in Assembly Language is "complexity and difficulty in programming and debugging."

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What generation of programming language is *Python*?

*Answer:*

Thrid generation of programming language.

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What is the purpose of a *compiler*?

*Answer:*

The purpose of a compiler is to "translate high-level programming code into machine code or lower-level code that a computer's central processing unit (CPU) can understand and execute."

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

*Answer:*

REPL stand for Read-Eval Print 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 is not true that Python development always has to take place using interactive mode within the Python interpreter. Python development can also occur in script or program files that are written in a text editor and then executed using the Python interpreter. Interactive mode is useful for quick testing and experimentation, but for larger and more complex programs, it is common to write code in script files, which can be saved and run as standalone Python programs.

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What does the term IDE stand for?

*Answer:*

IDE stand for Integrated Development Environment.

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

*Answer:*

The main reason why programmers use code libraries is to "reuse existing code and save time and effort in development."

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

*Answer:*

Another language that specifically supports data science 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:*

In the expression "20 + 10," the operator is the "+" symbol.

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

*Answer:*

20,10 is operand.

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

*Answer:*

In Python, the '\*' operator is used for "multiplication".

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

*Answer:*

In Python, the '/' operator is used for "division" of numbers.

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

*Answer:*

In Python, the '' operator is used for "exponentiation" or raising a number to a 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:*

The final result of the expression 100 + 200 - 50 is 250.

b) 10 + 20 \* 10

*Answer:*

The final result of the expression 10 + 20 \* 10 is 210.

c) 20 % 3

*Answer:*

The final result of the expression 20 % 3 is 2.

d) 20 / (2 \* 5)

*Answer:*

The final result of the expression 20 / (2 \* 5) is 2.

e) 20 / 2 \* 5

*Answer:*

The final result of the expression 20 / 2 \* 5 is 50.

f) 10 \* 2 + 1 \* 3

*Answer:*

The final result of the expression 10 \* 2 + 1 \* 3 is 23.

g) 5 + 10 \*\* 2

​​​*Answer:*

The final result of the expression 5 + 10 \*\* 2 is 105.

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

*Answer:*

The final result of the expression (10 + 2 / 2) + ((10 \* 2) \*\* 2)

is 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:*

The result in the answer box below is 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:*

The result in the answer box below is 47827.5

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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:*

The result in the answer box below is 0.

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

*Answer:*

A "syntax error" is typically easier to identify than a "logical error."

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

*Answer:*

Yes, that is correct. The Python interpreter uses "exception messages" to report run-time errors.

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What command can be used to exit the Python interpreter?

*Answer:*

To exit the Python interpreter, can be used the exit() or 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.