

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:

The programming language we're using for this module is called Python, and we're using version 3.7 or higher.

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

Answer:

A computer program receives input, processes it, and then outputs the results.

__ What generation of programming language is *machine code*?

Answer:

Machine code is the earliest generation of programming languages.

___ 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 programming language

___ State one problem associated with writing code in Assembly Language.

Answer:

Different assembly languages are needed for different CPUs. Code is therefore not portable.

___ What generation of programming language is *Python*?

Answer:

The third generation of programming languages is called Python.

___ What is the purpose of a *compiler*?

Answer:

Compilers are used to convert high-level programming code—such as that written in languages like C, C++, or Java—into machine or binary code that can be executed directly by a computer's processor. The complete code block is processed all at once by a compiler.

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

for?

Answer:

REPL stands for Read, Evaluate, Print, and Loop.

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

Answer:

No, the Python interpreter's interactive mode is not always required for Python programming.

___ What does the term IDE stand for?

Answer:

IDE stands for Integrated Development Environment.

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

Answer:

Programmers typically use code libraries to promote code reuse by utilizing pre-written and tested code modules, which reduces the time and effort required for development.

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

Answer:

'R' language specifically supports *data science*.

__ 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.

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

Answer:

20 and 10 are the operands.

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

Answer:

Within Python, **multiplication** is performed by the '*' operator.

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

Answer:

Division is performed by the '/' operator.

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

Answer:

Exponentiation is performed by the '**' operator.

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:

Result=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:

Result=48517.5

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:

It shows ZeroDivisionError.

___ 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.

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

Answer:

'Traceback' message is used by the Python interpreter to report run-time errors.

___ What command can be used to exit the Python interpreter?

Answer:

To exit the Python interpreter this `exit()` command can be used.

Exercises are complete

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