

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 is the programming language being used with version is 3.10

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

Answer:

Produces output

What generation of programming language is *machine code*?

Answer:

Machine code is the First generation programming language.

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

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

Answer:

Assembly is known as 2nd generation programming language

State one problem associated with writing code in Assembly Language.

Answer:

It is low level and platform-specific, making it less portable and harder to maintain than higher level languages.

What generation of programming language is *Python*?

Answer:

It is 4th generation.

What is the purpose of a *compiler*?

Answer:

The purpose is to translate high level programming code into machine code or lower level code that can be executed by computer.

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

Answer:

REPL stands for "Read-Eval Print Loop"

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

Answer:

It is not true because python programs can also be written in source code files and executed.

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:

Code libraries are used for :
saving time
simplifying complex tasks
reusing the existing codes.

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

Answer:

R is the another language used in the data science field.

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:

“10” and “20” are the operands.

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

Answer:

Multiplication

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

Answer:

Division

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

Answer:

Exponentiation

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:

3

d) $20 / (2 * 5)$

Answer:

2.0

e) $20 / 2 * 5$

Answer:

50.0

f) `10 * 2 + 1 * 3`

Answer:

23

g) `5 + 10 ** 2`

Answer:

105

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

Answer:

104.0

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:

48182.5

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 will result in a “Zero Division Error”

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

Answer:

Syntax errors are typically easier to identify because they are detected by the compiler during the code compilation or execution process.

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

Answer:

Python uses run-time errors to report issues during program execution

What command can be used to exit the Python interpreter?

Answer:

We can use the command (delete) or press 'Ctrl+D' in most systems

Exercises are complete

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