

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:

The programming language used on this module is called Python; version 3.7 or higher is what we're utilizing.

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 often considered a representation of the first generation of programming languages.

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

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

Answer:

Assembly level language is known as the 2nd generation programming language.

State one problem associated with writing code in Assembly Language.

Answer:

One significant challenge associated with writing code in Assembly Language is the lack of portability.

What generation of programming language is *Python*?

Answer:

Python is the third generation of programming language.

What is the purpose of a *compiler*?

Answer:

A compiler is a crucial tool in the software development process, enabling programmers to write code in high-level languages while facilitating efficient and optimized execution on various computing platforms.

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, it is not true that Python development always has to take place using the interactive mode within the Python interpreter.

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 use code libraries because the use of code libraries enhances efficiency, reliability, and maintainability in software development, allowing programmers to leverage existing solutions and focus on solving higher-level problems.

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

Answer:

SQL (Structured Query Language) is the other language that support 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:

In the expression " $20 + 10$," the operator is the plus sign (+).

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:

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

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

Answer:

the '/' operator is used for division.

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

Answer:

In Python, the '**' operator is used for 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:

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:

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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 is 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:

The result is 4

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:

Dividing a number by zero in Python results in a **ZeroDivisionError**.

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

Answer:

Syntax errors are typically easier to identify compared to logical errors.

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

Answer:

The Python interpreter uses the "Traceback" message to report run-time issues.

What command can be used to exit the Python interpreter?

Answer:

To exit the Python interpreter **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.