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:

We will be using python programming language. The version of the language that we are using is 3

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

Answer:

Input-evaluate-process-output

What generation of programming language is *machine code*?

Answer:

First generation 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:

Complexity and Low-level Nature

What generation of programming language is *Python*?

Answer:

Third generation language

What is the purpose of a *compiler*?

Answer:

The purpose of a compiler is to translate the high-level programming language into assembly or machine level language.

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:

No, it is not true that Python development always has to take place using interactive mode within the Python interpreter.

What does the term IDE stand for?

Answer:

Integrated Development Environment

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

Answer:

The main reason why programmers use code libraries is to leverage pre-written functions and tools, allowing them to avoid reinventing the wheel. This promotes code reuse, reduces development time, and helps maintain consistency and reliability in their projects.

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

Answer:

Besides Python, another language that specifically supports data science is R.
R is great for statistical analysis and has a lot of libraries for data visualization, like ggplot2.
It's really popular among statisticians and data analysts because it's designed for data analysis tasks.

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:

+

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

Answer:

20 10

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:

exponential

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:

Logical error

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

Answer:

A syntax error

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

Answer:

Exception messages such as value error, type error, index error will be shown
Traceback message

What command can be used to exit the Python interpreter?

Answer:

Exit() or quit()

Exercises are complete

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