

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 name of the programming language that we are using is “Python” and the version of the Language is 3.12.3.

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

Answer:

A computer program takes some input, performs some processing then produces “Output”.

What generation of programming language is *machine code*?

Answer:

Machine code is “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 a second generation programming language.

State one problem associated with writing code in Assembly Language.

Answer:

A problem with Assembly is that it's difficult to write and understand.

What generation of programming language is *Python*?

Answer:

Python is a fourth-generation programming language.

What is the purpose of a *compiler*?

Answer:

A compiler translates codes into machine instructions.

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:

No, Python development does not always have to be in interactive mode.

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 to save time by reducing code.

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

Answer:

R is another language used for 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:

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

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

Answer:

The operands in " $20+10$ " are 20 and 10.

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

Answer:

The calculation which is performed by the "*" operator is multiplication.

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

Answer:

The calculation which is performed by the “/” operator is division.

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

Answer:

The calculation which is performed by the “* *” operator is that it raises a number to the power of another number.

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 (Multiplication first, then Addition)

c) $20 \% 3$

Answer:

2 (Remainder of 20 divided by 3)

d) $20 / (2 * 5)$

Answer:

2.0 (Calculating firstly from bracket then division)

e) $20 / 2 * 5$

Answer:

50 (Left to Right: $20 / 2 = 10$, then $10 * 5 = 50$)

f) $10 * 2 + 1 * 3$

Answer:

23 (Multiplication first: $10 * 2 = 20$, $1 * 3 = 3$, and then Addition: $20 + 3$)

g) $5 + 10 ** 2$

Answer:

105 ($10 ** 2 = 100$, then $5 + 100 = 105$)

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

Answer:

411 ($2 / 2 = 1$, so $10 + 1 = 11$; $10 * 2 = 20$, $20 ** 2 = 400$; $11 + 400 = 411$)

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:

$100.6 + 200.72 + 213.3 = 514.62$

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:

$20.25 * 100 * 23.9 = 48397.5$

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:

A "ZeroDivisionError" occurs in Python when a number is attempted to be divided by zero.

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

Answer:

Syntax errors are easier to identify.

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

Answer:

Python uses them to indicate that something exceptional has occurred.

What command can be used to exit the Python interpreter?

Answer:

The command `exit()` or `quit()` can be used to exit the python interpreter.
