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:

Python. Currently using python version 3.11 as of September 2023

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

Answer:

Generates output.

What generation of programming language is *machine code*?

Answer:

First Generation Language (1GL)

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

Codes are not portable. Codes written for one CPU may not be directly compatible with different CPUs architecture.

What generation of programming language is *Python*?

Answer:

Third generation language programming language. (3GL)

What is the purpose of a *compiler*?

Answer:

A compiler translate high level language’s code to assembly/machine code for execution.

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 supports both interactive-mode and script-mode.

What does the term IDE stand for?

Answer:

The term "IDE" stands for Integrated Development Environment.

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

Answer:

The main reason programmers use code libraries is being able to use reusable code components which saves time and effort in development.

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

Answer:

R

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 '1' are operands.

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

Answer:

'*' operator performs multiplication.

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

Answer:

'/' operator performs division.

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

Answer:

'**' operator performs 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:

2.0

```
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:

244.0

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:

48457.5

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:

Will encounter ‘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 than logical errors.

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

Answer:

The Python interpreter uses "exception messages" to report runtime errors.

What command can be used to exit the Python interpreter?

Answer:

exit() command is used to exit Python interpreter.

Exercises are complete

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