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.

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 3.10

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

Answer:

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:

The syntax is difficult to understand

What generation of programming language is *Python*?

Answer:

Python is Third Generation Language.

What is the purpose of a *compiler*?

Answer:

The purpose of the complier is to translates a source program written in some high-level programming language into machine code for some computer architecture.

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

Answer:

Read Evaluate Print Loop

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

Answer:

No

What does the term IDE stand for?

Answer:

Integrated Development Environment

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

Answer:

Programmers use code libraries to quickly locate existing resources instead of reinventing the wheel.

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

Answer:

Java
JavaScript
Ruby
C#
Scala
TensorFlow

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 10 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:

In Python double asterisk operator is used to help calculate the exponent of a number raised to a power.
Example:
let 2**3 is a q.n which can be done by “* *” .
So, the calculation can be done as 2*2*2.
And 8 will be the ans of 2**3.

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:

Error or undefined

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

Answer:

Syntax

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

Answer:

If I divide a number by 0 it report run time errors
EG;
A=10
B=0
C=a%b
Print(C)
It will show:

```
ZeroDivisionError
Cell In [2], line 3
1 a=10
2 b=0 ---->
3 c=a%b
4 print(c)
ZeroDivisionError: integer division or modulo by zero
```

What command can be used to exit the Python interpreter?

Answer:

exit()

Exercises are complete

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