

Algorithms and Computational Thinking

Autumn 2016

Thursday, 29th September 2016

Exercise 2 - Interpreters and compilers

The first part of this second exercise presents the notion of interpreter via three languages (i.e., Python, Scala and Swift) while the second part focuses on the creation of your first Scala code and the use of a Scala compiler to generate a compiled class that will be used to test our code. A good comparison table between interpreter and compiler is given on this website : <http://www.c4learn.com/c-programming/compiler-vs-interpreter/>.

Installation

All interpreters and Scala compiler are already installed on the computers of room 261! On an Apple computer Python and Swift interpreters should be already installed. Regarding Scala, you must first install *Homebrew* by following the instructions of this website : <http://brew.sh/>. Then, you must open a terminal window (type terminal in spotlight to find it) and type the following command line :

```
brew install scala
```

1. Preliminary information

Here you will find some useful information helping to complete the exercises below.

How to declare a variable ?

Python : *variableName* = *variableValue*

Scala : `var variableName = variableValue`

Swift : `var variableName = variableValue`

The *variableValue* can be a string of characters, an integer, a float... In the case of a string, you must add " around the value of the variable. If the

variable is a number, you can directly write the value.

How to print a variable ?

Python : `print(variableName)`

Scala : `print(variableName)`

Swift : `print(variableName)`

2. Interpreter exercises

Open a terminal window and start the interpreter of the programming language of your choice.

How to start an interpreter ?

Python : `python`

Scala : `scala`

Swift : `swift`

How to quit the interpreter ?

Python : `quit()`

Scala : `:quit`

Swift : `:quit`

With the preliminary information, you are able to create and print variables and you also know how to start and quit and interpreter, try to do the following exercises below :

1. Create two variables containing integers and a third variable having the sum of the first two variables. Finally, display the sum.
2. Create two variables containing strings of characters (e.g., the first variable can contain "Hello" and the second "World") and a third variable that concatenates them, i.e., "HelloWorld" if we follow the previous example. Finally, display the concatenation of the two words.

3. Compiler exercise

Create a folder on the desktop of the name of your choice and then create a file called *HelloWorld* with the extension *.scala* in this folder with *Atom*.

The content of this file is the following where the function *main(args : Array[String])* is the entry point of the class :

```
//My first Scala code!  
object HelloWorld {  
    def main(args: Array[String]) {  
        println("Hello, world!")  
    }  
}
```

Open a terminal window and go at the root of your folder previously created by typing :

```
cd folderPath
```

Compile the file called *HelloWorld* by typing :

```
scalac HelloWorld.scala
```

After the compilation, a file called *HelloWorld.class* is created in your folder, which can directly be executed with the following command :

```
scala -classpath . HelloWorld
```

After the execution, you should see **Hello, world!** in the terminal.

This exercise can be found in this Scala tutorial : http://www.scala-lang.org/docu/files/ScalaTutorial-fr_FR.pdf.