

Scala in 6CCS3CFL

For the coursework in this module you are free to use any programming language you like, but I will show you all my code using Scala—I hope you have fond memories of Scala from PEP. If you need a reminder of the Scala handouts for PEP have a look [🔗](#)

But as said, you do not need to use Scala for your own code.¹ I will use the current stable version of Scala, which is 2.13.6. For various reasons, I am NOT GOING TO USE THE LATEST VERSION OF SCALA 3.0! Please be aware of this when you run my code.

The main difference to the Scala I showed you in PEP is that in CFL I will use the Ammonite REPL

<https://ammonite.io/#Ammonite-REPL>

This is a drop-in replacement for the original Scala REPL and works very similarly, for example

```
$ amm
Loading...
Welcome to the Ammonite Repl 2.4.0 (Scala 2.13.6 Java 9)
scala> 1 + 2
res0: Int = 3
```

Ammonite uses the same Scala compiler, just adds some useful features on top of it. It is quite main-stream in the Scala community and it should therefore be very easy for you to install amm. If you work under a Unix-like system, a sure way to install the right version of Ammonite is by using curl:

```
$ curl -L https://github.com/com-lihaoyi/Ammonite/
releases/download/2.4.0/2.13-2.4.0 --output amm
```

The big advantage of Ammonite is that it comes with some additional libraries already built-in and also allows one to easily break up code into smaller modules. For example reading and writing files in Ammonite can be achieved with

```
scala> import $ivy.`com.lihaoyi::os-lib:0.8.0`
scala> import os._

scala> read(pwd / "file.name")
res1: String = "...

scala> write.over(pwd / "file.name", "foo bar")
```

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¹Haskell, Rust, Ocaml were other languages that have been used previously in CFL. I recommend to not use Java or C for writing a compiler, but if you insist, feel free. It has been done before.

The latter writes the string "foo bar" into the file "file.name", which is located in the current working directory. For loading and accessing code from another Scala file, you can import it as follows:

```
import $file.name-of-the-file
import name-of-the-file._
```

This assumes the other Scala file is called name-of-the-file.sc and requires the file to be in the same directory where amm is working in. This will be very convenient for the compiler we implement in CFL, because it allows us to easily break up the code into the lexer, parser and code generator.

Another feature which exists in Ammonite, but not yet in the current version of Scala (it will be in the next version called dotty) is that you can mark functions as @main. For example

```
@main
def foo() = ...
```

This means you can now call that function from the command line like

```
$ amm file.sc foo
```

If you want to specify an argument on the commandline, say an int and a string, then you can write

```
@main
def bar(i: Int, s: String) = ...
```

and then call

```
$ amm file.sc 42 foobar
```

What is also good in Ammonite that you can specify more than one function to be "main" and then specify on the command line which function you want to run as entry-point.

Another feature you might like to use is that Ammonite can "watch" files. This means it can automatically re-run a file when it is saved. For this you have to call amm with the option -w, as in

```
$ amm -w file.sc
```

Of course this requires that you use println for inspecting any data, as otherwise nothing will be displayed at the commandline.

To sum up, Ammonite is a really useful addition to the Scala ecosystem. You can find more information about how to use it in the first five chapters of the "Hands-on Scala" book by Li Haoyi. These chapters are free and can be used as a reference, see:

<https://www.handsonscala.com/part-i-introduction-to-scala.html>