

## Homework 1

1. **(Optional)** If you want to run the code presented in the lectures, install the Scala programming language available (for free) from

`http://www.scala-lang.org`

2. **(Optional)** Have a look at the crawler programs. Can you find a usage for them in your daily programming life? Can you improve them (in cases they are linked on different levels, they visit web-pages several times)?
3. Read the handout of the first lecture and make sure you understand the concepts of strings and languages.
4. In the context of the AFL-course, what is meant by the term *language*?
5. Give the definition for regular expressions. What is the meaning of a regular expression?
6. Assume the concatenation operation of two strings is written as  $s_1@s_2$ . Define the operation of *concatenating* two sets of strings.
7. Assume a set  $A$  contains 4 strings and a set  $B$  7 strings, how many strings are in  $A@B$ ?
8. How is the power of a language defined? (Hint: There are two rules, one for  $_0$  and one for  $_{n+1}$ .)