Programmiersprachen – Programming Languages
LVA 185.208, VU, 3 ECTS, 2014 S

Third Exercise

Exercise

Develop a syntax-aware editor for programs in the language as developed in
exercise 2. The editor shall be written in a statically typed functional language
like Haskell and ML. In addition to the usual functionality of an editor (loading,
showing, modifying and storing text), the editor shall highlight

- obvious syntactic errors like unbalanced braces and unterminated strings,
- variables occurring as parts of strings, but not outside of strings (so that
  they never can become bound),
- variables (not procedure names) occurring outside of strings, but not as
  parts of strings (so that they are never used).

You can use text attributes like colour, underlining, thickness, inversion and size
to highlight the current cursor position, names and other syntactic elements.

It is not necessary (although possible) that the editor runs in its own window. As
a simple solution you can use a text terminal (e.g., xterm) and rewrite all of its
contents on each change.

In this exercise it is important to manage data. At a first glance, that seems to
be difficult to do in modern functional languages. However, there are several
simple ways to do that. Consulting the standard libraries of the used
programming system may help to find a good solution.

The Implementation Language

To program in ML we recommend the use of OCaml. This system extends ML
with object-oriented features. They support a programming style similar to that
of Java. Please use only the functional concepts of the language to solve the
exercise, don't use the object-oriented language extensions.

Information on Haskell can be found on the Haskell page. Essentially you can
select between GHC and Hugs. GHC is a rather large and efficient system. You
can download an entire development platform including all tools that you will
probably need. Hugs is a simpler system based solely on an interpreter. Because
of the better performance, GHC is preferable over Hugs for the solution of this
exercise.