Program Optimisations and RTS, SS 2019

Assignment 1: Syntax Parser for ANSI C99

In this assignment the syntactical correctness of ANSI C99 programs shall be checked. The scanner and parser generators flex/bison (or lex/yacc) shall be used. A slightly modified scanner and parser published by Jeff Lee 1985 supporting ANSI C99 is provided as course material. Note that preprocessor directives are not supported by the provided scanner/parser and handling of preprocessor directives is not part of the assignment. The scanner/parser reads an input file, copies it to the output, and reports 'syntax error' with a column position ^ in case of an error, otherwise the scanner/parser terminates silently.

Additionally to scanner.l and parser.y also a Makefile is provided and two test cases: random.c (error-free from the GNU C library) and randerr.c (erroneous).

The following tasks have to be done in Assignment 1:

1) Get familiar with flex/bison and make slight modifications to study the sources in more detail.
2) Build the executable `cparser` with the makefile. Unfortunately, the gcc compiler reports several warnings. Remove the warnings by changing the source files and not modifying the compiler flags. In fact only a couple of declarations must be added.
   Command line interface:
   ```
   $ cparser test.c
   ```
3) In the current version the silent termination in case of error-free programs is cumbersome. Please modify the program and report before termination and last line 'No errors detected.' in case of error-free programs and 'Errors detected.' otherwise. Again only few lines of code are required.

Build a file assignment1.zip containing the following files and upload it to Moodle:

1) Remarks.pdf: max. 1 page, whatever is worth saying
2) Makefile: for creating an executable and cleaning files
3) parser.y
4) scanner.l

Installations of flex/bison are available at the VM scws15.cs.univie.ac.at (reachable via almighty.cs.univie.ac.at) which can be used for development. Alternatively, you can develop the parser somewhere else after installing flex/bison by yourself, but your code will be tested on scws15.

Due date: **1.4.2019**