

COSC 4P75 Assignment 1

Fall 2011/12

Due: Oct. 11 @ 12:00 noon.

Scanner

Write and test the lexical analyzer (scanner) for the project language (<http://www.cosc.brocku.ca/Offerings/4P75/Syntax.pdf>). The implementation language is Java. Make appropriate use of Java libraries (except, of course, lexical analysis facilities) and object-oriented techniques.

The scanner is intended for a single-pass compiler and should thus be implemented as an input filter and provide single symbol (token) lookahead. It should use the techniques discussed in class and provide appropriate error detection and reporting.

Write a main class called `Compiler`, as the compiler main, to test the scanner. If there is a command line argument, the program should interpret it as the name of the file to be compiled without an extension (i.e. no `.lng`). If there is no command line argument or more than one argument, the program may proceed in any way determined by the programmer, including terminating with an error.

The source file should have the name `xxx.lng` where `xxx` is the file name specified as the command line argument. The compilation process should produce two text files in the same directory as the source file: `xxx.lis` - a source listing file with error messages (if any), and `xxx.spm` - a file for generated code. For the purposes of testing the scanner, the code file should be used to list the tokens encountered. The main class should repeatedly obtain and display (to the code file) the tokens from the lexical analyzer, until obtaining the EOF token.

Develop a set of test files to test the scanner. This should include both valid and invalid input.

Run your program against each of your test files and include in your submission:

- source listing of all classes in your program (in alphabetic order by class name within package)
- listing of each source (`.lng`) test file
- listing of each generated listing (`.lis`) file
- listing of each generated code (token, `.spm`) file

Submission

Your submission will be in two parts: electronic and paper. The paper submission should include the listings above and should have a completed coversheet.

In addition to your paper submission, you must make an electronic submission of the assignment. Regardless of how you developed the project, create a directory on sandcastle containing the source (`.java`) and code (`.class`) files for your project. In this directory, at the sandcastle prompt, type:

```
c4p75a
```

and, when prompted, enter the appropriate information using 1 as the assignment number. The submission program will copy the entire working directory, and all subdirectories, to the marking directory, so you should ensure that the content of the directory is what you desire to submit. You could create a special directory for submission and only include what is needed, however, make sure the project will run from the command line in that directory before submitting it.

Note: Since the programs will be run versus a test suite, adherence to the program specification and submission instructions is of paramount importance. Submissions in violation of the guidelines may be subject to a penalty.

As usual, the complete paper submission should be placed in an envelope to which a completed coversheet (<http://www.cosc.brocku.ca/coverpage>) is attached. The submission should be made to the **instructor's mailbox in the Department Office** in accordance with the assignment guidelines and not in violation of the regulations on plagiarism (<http://www.cosc.brocku.ca/about/policies/plagiarism>). **Note:** Assignments not including a coversheet will **not** be marked.