Project 4

Small C compiler for Java assembly code (Jasmin)

The goal of our project this semester is to develop a prototype C compiler. This is done by compiling C programs into embedded platforms such as 68K, MIPS, ARM, or pseudo assemblies. In this class we will use Java assembly code (Jasmin, http://jasmin.sourceforge.net/) as the target codes. **The project is divided into several parts including language definition, lexical analyzer, C-grammar, symbol table handlings, parser, and code generation.** In the final assignment, you will need to choose the set of language features which you want to develop in this course, and write the whole compiler (including the code generator).

In your hand-in report, you need to have the followings:
- **To define the subset of the language which you want to choose from C.**
- Give a set of testing programs and the generated Jasmin assembly files, which can illustrate the features of your testing programs. (at least 3 test programs)
- Use the "**ANTLR**" to help you develop your compiler.
- You can use **C**, **C++**, or **Java** to write your compiler. (Java is recommended)
- Your C subset should at least contain the following features:
    - Integer and floating-point data types: `int`, `float`.
    - Statements for arithmetic computation. (ex: a = b+2*(100-1))
    - Comparison expression. (ex: a > b)
    - if-then-else program construct.
    - `printf()` function with one/two parameters. (support types: `%d`, `%f`)

Please turn in the following files to ECOURSE:
- A file describes your language which is a subset of C language. (MS-WORD file)
- The source codes:
    - Your compiler
        - (a) ANTLR grammar file, myCompiler.g.
        - (b) A program to call your parser, myCompiler_test.
    - Testing programs (.c) and the corresponding Jasmin assembly codes (.j) generated by your compiler. (at least 3 programs)
- A readme file (pure text file) describes the features of your compiler and explains how to compile and execute your compiler.
- Makefile

Due Date: June 21 (Friday), 24:00, 2019