ASSIGNMENT 5

In this assignment, you're required to implement the various phases of a Compiler (except code optimization), for a subset of the **C language** consisting of the following operations:

1. Variable declarations, for *int* and *float* data types.
2. Arithmetic, logical and relational expressions (with suitable short-circuit evaluation, wherever applicable).
3. Function calls and function definitions.
4. Conditional expressions: *if-else* and *switch-case* statements.
5. Loops: *for* and *while.*

The above task should be performed in 2 passes: The first pass should perform Lexical analysis, Parsing, Semantic analysis and Intermediate code generation operations, taking as input a C program (as *.c format* file) and producing as output the 3 address code in the *Quadruple format*. The second pass should take as input the generated quadruple format Intermediate code and produce as output the target MIPS code, runnable on the SPIM simulator.

Note that all of the operations mentioned in the C-subset above can be nested, i.e. the input may contain nested blocks for declarations, expressions, function calls, conditionals and loops, and you're therefore, expected to properly handle the respective scopes, data types etc. As in earlier assignments, use *flex* to generate the scanner and *bison* to generate the parser.