

CMSC 430 Programming Exercise

Scanner/Parser/Type Checker

Due Date: Wednesday, March 28th, 11:59pm.

This project is the first in the series of projects that you have to implement in order to build a compiler for 'C-', a variant of 'C'. Your compiler will scan, parse, type check, and eventually generate Java class files from input C- programs. In this project you will implement the compiler front end (scanner, parser, and type checker) for C-.

Getting Started

To get the materials for this project, type the following line to copy over the files.

```
cp -r ~ctseng/proj2 ~/proj2
```

Look at the file README for more detailed directions and hints.

Requirements

Lexical Analyser The lexical analyser should identify the keywords, operators, identifiers, strings, constants and other necessary characters correctly. You have to generate the lexical analyser using JLex, the java lexical analyser generator. The JLex specifications are very similar to the lex specifications. In addition, you will need to support C++ style comments.

Parser The parser is generated using the java parser generator, CUP. CUP specifications are similar to yacc/bison. You will be required to insert error tokens to provide informative error messages for several common errors.

Type Checker You will need to add simple type checking to your C- front end. You will apply syntax-directed translation, inserting action code for CUP productions to build a symbol table, then use symbol table information to perform type checking. Examples include making sure that all variables accessed are legally declared and operands have correct types.

Submission Instructions

You can turn in your assignment using the `submit` program. To use `submit`, add the following line to your `.login` file.

```
alias submit ~ctseng/bin/submit
```

The `submit` program takes as arguments 1) the project number and 2) a list of files to be submitted. To submit, go to your directory containing the code and type:

```
submit 2 mycc.lex mycc.cup *.java
```

The `submit` program will accept multiple submissions up to the submission deadline, overwriting previous submissions. Feel free to submit your project as many time as you desire before the deadline.

The late submission policy is: 20% penalty for first 24 hours, 10% each additional day. Maximum 1 week late.