CSL302: Compiler Design

Lab-5 (Syntax Analysis)

Due Date: 29-Aug-2025

Instructions:

1. Prepare a zip file and upload your solutions on canvas
2. Include a readme file

Task-0: Yacc tool set up

If you are using ubuntu, you can install yacc using the below command

sudo apt install bison

Task-1: Execute the demo files

Download the demo lex and yacc files discussed in the class from canvas (corresponding to yacc tutorial). Try to compile the lex files and yacc files. Execute them and check if you are getting the expected output after executing them.

You can use the following steps for compiling and running

1. lex <filename>.l
2. yacc -d <filename.y>
3. gcc lex.yy.c y.tab.c
4. ./a.out

Task-2: Writing Custom Syntax Analyzer

1. Extend the variable declaration grammar discussed in the class to capture multiple variables to be declared at once for a given datatype.
    a. For example int a, b, c; should be valid
    b. float a, c, d; should be valid.

2. Extend the arithmetic expression grammar to capture simple sentences involving assignment operations.
    a. For example: a=b+c*d-e should be valid
    b. a+b=c-d should be invalid.
    c. Multiple sentences should also be valid; they can be separated by ';'

3. Extend the above grammar (in part-2) to capture the for loop syntax in C as follows
    a. for (EXP; EXP;EXP) S where EXP is any valid arithmetic expression and S is a single assignment statement.