

# CSL302: Compiler Design

## Lab Exam-3 (2025-26-M Semester)

**Max. Points:** 100

**Duration:** 1 hour 30 minutes

November 20, 2025

### Instructions

- The question paper contains 2 questions. Prepare 2 folders; each one should correspond to question and name the folder as <Q1> or <Q2> depending on the question number.
- The folder should also contain a ReadMe file, which should list the instructions to execute your program.
- Prepare a zip file for your solutions. The zip file should be named as RollNo\_Name.zip
- The submission details will be announced at the end of the exam.

### Question-1

For any given valid arithmetic expression containing the operators  $*$ ,  $+$ ,  $-$ ,  $/$  write semantic rules that prints the postfix representation of the expression.

[15 Points]

### Question-2

Assume that a programming language uses the following syntax for switch statement. Here, E is an expression, and  $V_1, V_2, \dots, V_n$  are variables.

```
switch (E) {  
    case  $V_1$ :  $S_1$ ;  
    case  $V_2$ :  $S_2$ ;  
    case  $V_n$ :  $S_n$ ;  
    default:  $S_{n+1}$ ;  
}
```

Write a semantic analyzer to generate the three address code with the following semantics. If the expression E evaluates to value of  $V_1$  then  $S_1$  should be executed, if it evaluates to the value of  $V_2$  then  $S_2$  should be executed, etc. If does not evaluate to any of  $V_1, V_1 \dots V_n$  then  $S_{n+1}$  should be executed. Once any of the statements is executed, the control should exit the switch statement.

Note that you are required to write the complete, lexical, syntax and semantic analyzers required for your implementation.

[85 Points]