# CS301P Compiler Design Laboratory Exercises Lab#8

## Date: October 30, 2024

## Objectives

- To implement the translation of different program constructs (arithmetic expressions and selection statements) to equivalent three address codes.

## Exercises

1. Implement a CFG grammar with associated semantic rules to translate the selection statements and *while* iterative statement of C language to equivalent three address code. You may assume any complex conditional expressions. Consider the following example. However you may make assumptions to simplify the problem.

```
k = 0;
while (k < n || n != 100) {
 if (x < 100) {
  a++;
 }
 else {
   a--;
 }
 y = a;
 k++;
}
k = m + n
```

should be translated to

```
100  t0 = 0
101  k = t0
102  if k < n goto 106
103  goto 104
104  if n != 100 goto 106
105  goto 115
106  if x < 100 goto 108
107  goto 111
108  t1 = a + 1
109  a = t1
110  goto 113
111  t2 = a - 1
112  a = t2
113  t3 = a;
114  y = t3;
```

```
115   t4 = m + n
116   k = t4
```

## Submission Guidelines

- The name of the parser executable should be *parser*
- The respective lex and yacc programs can have the same name but with the extension *.l* and *.y*, respectively.
- The names for the given program should be *prob1* of course with appropriate extensions.
- Other submission requirements remain same as the previous lab

### Evaluation Guidelines

Same as the previous lab.

### Academic Honesty

Same as the previous lab.