Department of Computer Science and Engineering
Indian Institute of Technology, Kharagpur

Compiler Theory: CS31003
3rd year CSE, 5th Semester

Assignment - 5: IC Translation (Expression) *Marks: 10*
Assign Date: October 06, 2020 Submit Date: 23:55, October 13, 2020
Mode: Individual Submission

1. Briefly describe with examples how the translation of expressions into three-address codes works for: $2 \times 3 = 6$

   (a) Arithmetic Operators

   (b) Boolean Operators

   (c) Array References

2. Consider the following grammar and Bison specs for translating to three-address codes (as discussed in the class), translate the following to the three-address codes with the steps of reduction and annotated parse tree. $4 \times 1 = 4$

$$\begin{array}{lcl} L & \rightarrow & LS\backslash n \mid S\backslash n \\ S & \rightarrow & \text{id } = E \mid E \\ E & \rightarrow & E + E | E - E | E * E | E/E | (E) | -E | \text{num} \mid \text{ id} \end{array} \quad (1)$$

   $a = 5$
   $b = 6$
   $c = a + (b * (10/a))$
   $d = -c + a * b$

Note: Please submit your answer handwritten in paper. Upload your answer in .pdf format in the moodle server. File name should be named as ass5_roll.pdf, where "roll" is your roll number.