

# Compiler Construction

## Exercises for Assignment#1

October 4, 2018

1. What are the left associative and right associative operators? Give two other examples for each.
2. Define *term*, *expression*, and *factor*, using their built-in recursive structures. Construct an expression making use of all these three.
3. Construct parse trees for following using definitions of *term*, *expr*, and *factor*.
  - (a)  $(3 + 5 + 2)/(7 - 3 + 5)$
  - (b)  $(3 + 5/(2 + 5))$
4. Convert the expression  $(3 + 5)/4 * 2$  into postfix notation. Write all the necessary steps for this.
5. Define followings terms:
  - (a) Syntax Directed Definition
  - (b) Simple Syntax Directed translation
  - (c) Annotated Parse Tree
6. Construct annotated parse trees for each of the following:  $3 * 2 - 8 + 5$
7. Construct a syntax-directed translation scheme that translates arithmetic expressions from infix notation into prefix notation in which an operator appears before its operands; e.g.,  $-xy$  is the prefix notation for  $x - y$ . Give annotated parse trees for the inputs  $7 - 3 + 5$ .

*Submission deadline: 12-04-2018 (in the lecture class). It should be solved in loose papers of 4 size, and stapled. Write your name and roll no. at top. Note: There are marks associated with these assignments*