

## Assignement-2 on Lexical Analysis

### CSC 340

### First term 2016-2017

Consider the following CFG describing a simple programming language.

A language with integers and integer operations

$$P \rightarrow D; P \mid D$$
$$D \rightarrow \text{def id(ARGS) = E;}$$
$$\text{ARGS} \rightarrow \text{id, ARGS} \mid \text{id}$$
$$E \rightarrow \text{int} \mid \text{id} \mid \text{if } E_1 = E_2 \text{ then } E_3 \text{ else } E_4 \\ \mid E_1 + E_2 \mid E_1 - E_2 \mid \text{id}(E_1, \dots, E_n)$$

In this assignment, you are required to write a lexical analyzer for this language. You are allowed to make use of the web-based compiler construction tools ([hackingoff.com](http://hackingoff.com)) to generate the required finite automat and table presentation.

You need first to identify the relevant token classes then use the tools to generate the NFA, DFA, and the table presentation of the DFA. You can use this table in your lexical analyzer code.

**Deliverables:**

You need to hand in

- 1) a list of regular expressions describing the relevant token classes
- 2) A copy of the NFA as generated by the compiler construction tool.
- 3) A copy of the DFA.
- 4) Your code
- 5) Several samples of the input and output.

- e.g., Input:

X1=5

- Output

<identifier,"x1">, <op,"=">, <int,"5">

**Due Date Tuesday 27 December**