UNIVERSITY OF AMSTERDAM

Informatics Institute
Systems and Networking Lab
Parallel Computing Systems Group

Compiler Construction
2019/20
Dr. Clemens Grelck
February 11, 2020

Assignment 2

Lexicographic Analysis

Consider the following regular expression:

a(c|ab)*

Assignment 2.1: Thompson's Construction

Construct a non-deterministic finite automaton (NFA) to recognise the above regular expression using Thompson's Construction.

Assignment 2.2: Subset Construction

Convert the resulting non-deterministic finite automaton (NFA) of the previous assignment into a deterministic finite automaton (DFA) using Subset Construction.

Assignment 2.3: Hopcroft's Algorithm

Minimise the resulting deterministic finite automaton (DFA) of the previous assignment using Hopcroft's Algorithm.

Assignment 2.4: Direct-coded Scanner

Construct a direct-coded scanner based the resulting minimal deterministic finite automaton (DFA) of the previous assignment.

Note:

It is compulsory to follow the algorithms mentioned and not your intuition, despite the simplicity of the regular expression considered. Describe intermediate steps and partial results to illustrate your systematic approach.

Assignment due date: Friday, February 21, 2020