

Automata Theory: Assignment 8

Due date: November 15 (Thursday)

Consider the following grammar:

$$\begin{aligned} S &\rightarrow aSa \mid A \mid C \\ A &\rightarrow bBb \mid bCb \mid E \\ B &\rightarrow bBb \mid \lambda \\ C &\rightarrow aC \mid bC \\ D &\rightarrow aD \mid \lambda \\ E &\rightarrow bb \mid bEb \end{aligned}$$

Problem 1 (4 points)

Simplify this grammar: remove all useless variables, λ -productions, and unit-productions.

Problem 2 (3 points)

Give an equivalent grammar in Chomsky normal form.

Problem 3 (3 points)

Give an equivalent grammar in Greibach normal form.