Automata Theory: Assignment 8

Due date: November 23 (Tuesday)

Consider the following grammar:

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

Problem 1 (3 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 (4 points)
Give an equivalent grammar in Greibach normal form.