

Automata Theory: Assignment 9

Due date: April 11 (Thursday)

Problem 1 (5 points)

Give a Chomsky normal form and a Greibach normal form for the following grammar:

$$\begin{aligned} S &\rightarrow AB \\ A &\rightarrow aAa \mid a \\ B &\rightarrow Bb \mid b \end{aligned}$$

Problem 2 (5 points)

Construct deterministic PDAs for the following languages:

- (a) $\{a^n b^m a^n : n \geq 1 \text{ and } m \geq 1\}$
- (b) $\{a^n b^m a^k : 1 \leq k \leq n \text{ and } m \geq 1\}$