

Exercises for FLL, Fall 2015, sheet 5

Return Tue Oct 13, in class

Exercise 1. Give a CFG for the language of the regular expression $(0^*10)^*$.

Exercise 2. Describe a generic method by which a CFG for the language $L(E)$ of any regular expression E can be constructed from E . *Hint:* use induction on the structure of E .

Exercise 3. Give a PDA to accept $L = \{0^n 1^m 2^k \mid n, m, k \geq 1 \text{ and } n \neq m\}$ by accepting state. Describe the idea behind your PDA in words and specify its transition function. Be kind to the TAs: your plain English description of the working principles of your PDA should be clear and complete.

1. $\delta(q_{\text{accept}}, 2, \#) = \{(q_{\text{accept}}, \#)\}$; $\#$ is any stack symbol
2. $\delta(q_2, 2, 0) = \{(q_{\text{accept}}, \epsilon)\}$; entering mode (ii)
3. $\delta(q_2, 2, Z_1) = \{\}$; case (iii)