

Automata and Formal Systems

Example exam tasks, to be discussed on 11.12.2015

Task 1 Construct an NFA and then a DFA for the language represented by the regular expression

$$(0 \cup 1)^* \cdot (101 \cup 11)$$

Describe the words of this language.

Task 2 Construct a DFA for the language

$$L_2 = \{w \in \{a, b\}^* \mid 3|\#_a(w) + 2\#_b(w)\}.$$

Task 3 Construct a context-free grammar and a DPDA for the language

$$L_3 = \{10^n * 01^n \mid n \in \mathbb{N}\}.$$

Task 4 Construct a TM for deciding the language

$$L_4 = \{a^n b^m c^k d^l \mid n, m, k, m \in \mathbb{N}, n + l = m + k\}.$$