Selected Topics in Automata and Logic

Repetition

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Exercise 1

Let L_1 be defined by the regular expression $a^{16}b^{16}$. Give an automaton $\mathcal{A}$ that accepts L_1. Choose an appropriate kind of automaton from the different types that have been presented in the lecture.

Can you accept it with an automaton that has less than 16 states?

Exercise 2

Let L_2 be the language $L_2 = \{a^n b^n \mid n \in \mathbb{N}\}$. Construct an automaton that accepts L_2. Again you may choose freely which kind of automaton you want to use.

Exercise 3

The *trace* of a tree is the word that consists of the labels of its leaves read from left to right. Let L_3 be the language of all binary trees whose trace is in L_2.

Construct an automaton that accepts L_3. You can use pebbles if you like.