

AFA Exercises

M1 Master Info – 2021

Exercise 1

Define an AFA \mathcal{A} with at most 8 states such that $L(\mathcal{A}) = \{\mathbf{a}^{12k} \mid k \geq 0\}$. Give the corresponding NFA and DFA, via the two constructions discussed in the lecture.

Exercise 2

Given two AFAs \mathcal{A}_1 and \mathcal{A}_2 , construct an AFA \mathcal{B} with $L(\mathcal{B}) = L(\mathcal{A}_1) \cap L(\mathcal{A}_2)$. Prove that your construction is correct. What is the size of \mathcal{B} ?

Exercise 3

Define an algorithm that decides the Emptiness problem of AFAs. What is its complexity?