

Advanced Sequence Analysis
Summer 2019

Exercises

Number 9 (14.06.2019), Discussion: 21.07.2019

1. Consider the problem of determining whether a DFA and a regular expression are equivalent. Express this problem as a language and show that it is decidable.
2. Let $ALL_{DFA} = \{\langle A \rangle \mid A \text{ is a DFA and } L(A) = \Sigma^*\}$. Show that ALL_{DFA} is decidable.
3. Let $A\varepsilon_{CFG} = \{\langle G \rangle \mid G \text{ is a CFG that generates } \varepsilon\}$. Show that $A\varepsilon_{CFG}$ is decidable.
4. Let $A = \{\langle M \rangle \mid M \text{ is a DFA that doesn't accept any string containing an odd number of 1s}\}$. Show that A is decidable.