

CSC544 Assignment #4

due Thursday 2/22 in class

version 1.1

Problems

1. Let $A = \{\langle R, S \rangle \mid R \text{ and } S \text{ are regular expressions and } L(R) \subseteq L(S)\}$. Show that A is decidable. (Hint: regular languages are closed under complementation, intersection, and union).
2. Prove that EQ_{DFA} is decidable by testing the two DFAs on all strings up to a certain size. Calculate a size that works.
3. A language is *prefix-free* if no member is a proper prefix of another member. Let $PF_{\text{REX}} = \{\langle R \rangle \mid R \text{ is a regular expression where } L(R) \text{ is prefix-free}\}$. Show that PF_{REX} is decidable.