CS 3530: Assignment 7b

Fall 2014

Problems

Problem 4.19 (20 points)

Problem

Let $S = \{\langle M \rangle : M \text{ is a DFA that accepts } w^{\mathcal{R}} \text{ whenever it accepts } w\}$. Show that S is decidable.

Solution

First construct a DFA N that accepts w. Then construct a DFA P (which is $\mathrm{M}^{\mathcal{R}}$) that accepts the reverse of the DFA M by flipping the transitions and the start and accept states. Then we need to determine if the DFAs N and P are in $\langle M \rangle$. We can determine if N and P are in $\langle M \rangle$ by determining the symmetric difference between the DFAs in M and N or P to determine they are equivalent.