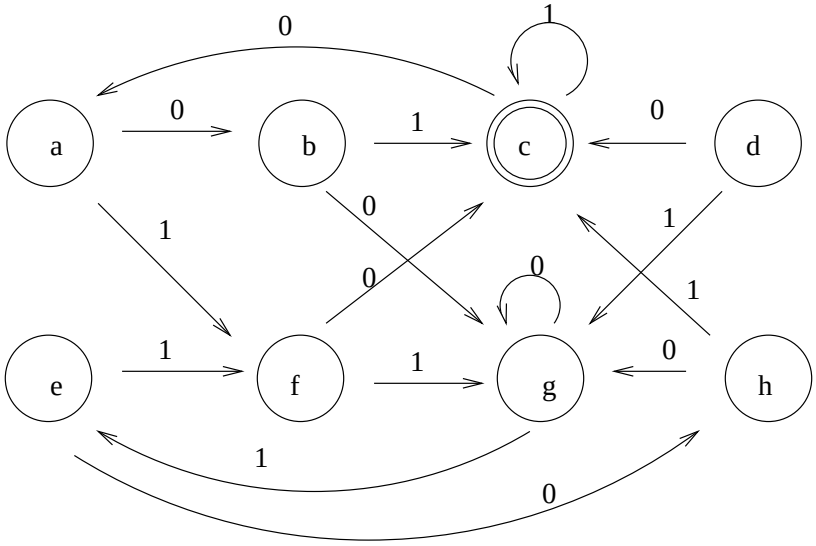
Cpt S 317 Homework #6

Please print your name!

1. For the finite automaton below, find a minimal-state finite automaton accepting the same language.



2. Show that we have an algorithm to check: given two FAs M_1 and M_2, whether there exists a word x such that x is accepted by M_1 but not accepted by M_2, or x is accepted by M_2 but not accepted by M_1.

3. Show that $L^R = \{x^R : x \in L\}$ is regular if L is regular. (x^R is the reverse of x, e.g., $aab^R = baa$)

4. Show that $Prefix(L) = \{x : \text{for some } y, xy \in L\}$ is regular if L is regular.

5. (A very very hard problem.) Show that $Half(L) = \{x : \text{for some } y, xy \in L \text{ and } |x| = |y|\}$ is regular if L is regular.