COT 4210 Homework #6: Reducibility
Due Date: Tuesday November 9, 2010 (in class)

1) Find a match in the following instance of the PCP: $\{\left[\frac{ab}{abab}\right], \left[\frac{b}{a}\right], \left[\frac{aba}{b}\right], \left[\frac{aa}{a}\right]\}$.

2) Show that A_{TM} is not mapping reducible to E_{TM}.

3) Let $S = \{ <M> \mid M$ is a TM that accepts w^R whenever it accepts $w\}$. Show that S is undecidable.

4) Consider the problem of testing whether a Turning machine M on an input w ever attempts to move its head left at any point during its computation on w. Formulate this problem as a language and show that it's decidable.

5) Show that the PCP is decidable over a unary alphabet, that is, over the alphabet $\Sigma = \{1\}$.

Bonus Question) Show that the PCP is undecidable over a binary alphabet, that is, over the alphabet $\Sigma = \{0, 1\}$.