Due on 23 April 2009, start of class

Please submit a paper copy in class.

CSE 355 Homework Six

1. 4.2, page 183 of Sipser.
2. 4.3 and 4.4, page 183 of Sipser
3. 4.6, page 183 of Sipser
4. 4.10 and 4.12, page 183 of Sipser
5. 4.19, page 184 of Sipser

A PDF version will be here on 14 April.

4.2 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.

4.3 Let $ALL_{DFA} = \{(A)| A is a DFA and L(A) = \Sigma^*\}$. Show that $ALL_{DFA}$ is decidable.

4.4 Let $Ae_{CFG} = \{(G)| G is a CFG that generates e\}$. Show that $Ae_{CFG}$ is decidable.

4.6 Let $B$ be the set of all infinite sequences over $\{0,1\}$. Show that $B$ is uncountable, using a proof by diagonalization.

4.10 Let $INFINITE_{PDA} = \{(M)| M is a PDA and L(M) is an infinite language\}$. Show that $INFINITE_{PDA}$ is decidable.

4.12 Let $A = \{(R,S)| R and S are regular expressions and L(R) \subseteq L(S)\}$. Show that $A$ is decidable.

4.19 Let $S = \{\{M| M is a DFA that accepts $w^r$ whenever it accepts $w$\}$. Show that $S$ is decidable.