CS 280: Midterm Exam

Date: 3 Nov 99

Problem 1: *(10 points)* Write a DFA which accepts the set of all strings of as and bs which contain abb.

Problem 2: *(10 points)* Give a regular expression for the set of all strings of as and bs which do not contain ab.

Problem 3: *(10 points)* Let L be an infinite subset of $\{a^n b^n \mid n \geq 0\}$. Using the pumping lemma, prove that L is not accepted by any DFA.

Problem 4: *(10 points)* Write a context free grammar which generates all strings of as and bs which are not of the form $a^n b^n$. Your CFG must generate $aabbb$ and $abab$ but not $aabb$, for example.