Homework 3

Due: 2014.12.16 in class

Problem 1 Construct a nondeterministic finite automaton that accepts all strings of 0's and 1's that start and end with the same symbol. Then use the subset construction to convert your nondeterministic finite automaton to a deterministic finite automaton.

Problem 2 Write a regular expression denoting all strings of a's and b's with at least one a and at least one b.

Problem 3 Given a regular expression R how would you construct a regular expression for the complement of the set denoted by R. Hint: Think of all the tools you have.

Problem 4 Assume you know that $\{0^n1^n|n \geq 1\}$ is not regular. Prove that $\{xx^R|x \in (0+1)^*\}$ is not regular. x^R is the reversal of the string x.