Assignment 2

(Please work in pairs and submit one answer sheet for the pair.)

1. Consider the following FA.

(a) List one string of length 4 the FA accepts.
(b) List one string of length 4 the FA rejects.
(c) Explain in succinct but precise English what property of binary strings the FA tests for.

2. Use the subset construction to produce a DFA equivalent to the following NFA.

- [Text 3.11] Provide an algorithm to tell if the language is infinite or not if the input is
  (a) an RE
  (b) an NFA.
- [Text 4.1] Show that the set of regular languages is closed under reversal. That is, if $L$ is regular then so is $\{ x^R : x \in L \}$ where $x^R$ denotes the reversal of string $x$.

5. Show that regular languages are closed under first halves. That is, if $L$ is regular, and we define $L^{1/2}$ to be the set of all first halves of even-length strings in $L$, then $L^{1/2}$ is regular.

Due: Tuesday 8 September