Automata Theory - Quiz I

K. Subramani
LCSEE,
West Virginia University,
Morgantown, WV
{ksmani@csee.wvu.edu}

1 Instructions

1. Attempt as many problems as you can. You will be given partial credit.

2 Problems

1. Design a DFA to accept the language L, where
   $L = \{w |\ w \in \{0,1\}^*,\ \ w\ is\ divisible\ by\ 3,\ when\ interpreted\ as\ a\ binary\ number\}$. (3 points)
2. Convert the NFA in Figure (1) to a DFA. (3 points)

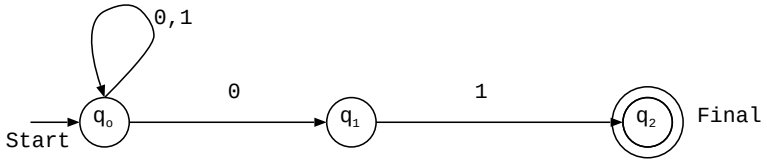

Figure 1: NFA

3. Convert the regular expression $\mathbf{01}^* + (\mathbf{0} + \mathbf{1})^*$ into an ϵ-NFA. (3 points)
4. Let $\Sigma = \{0, 1, 2\}$ be an alphabet. Write a regular expression to accept all strings over Σ^*, such that the third symbol from the right is 1 or 2, but not 0. (1 point)