CMSC330 Spring 2010 Quiz #1 Solution

1. (6 pts) What is the output (if any) of the following Ruby program? Write FAIL if code does not compile or if executing the code throws a runtime exception.

   a. a = 0
   puts “a++ = #{a+1}” if a
   puts a

   # OUTPUT = a++ = 1
   a++ = 1
   0

   b. b = [ 1, 2, 3 ]
   b.each { |c| puts c }

   # OUTPUT = 1
   2
   3

   c. if “route66” =~ /[^a-z]+/ 
   puts $1
   puts $2
   else
   puts “None”
   end

   # OUTPUT = 66
   66
   nil

2. (6 pts) Construct a NFA for the regular expression x|y*. You must use the algorithm described in class for full credit.

   ![NFA Diagram](image)

3. (8 pts) Convert the following NFA into a DFA by applying the subset construction algorithm discussed in class. Be sure to list the NFA states represented by each DFA state.

   ![DFA Diagram](image)