Due February 8

1. (a) Give an NFA with eight states that recognizes the language \( \{ w \in \{0,1\}^* | w \text{ ends with either 010 or 11} \} \).

   (b) Give an NFA with three states that recognizes the language \( 0^+1^*0^* \).
   \((0^+ \text{ means one or more 0’s}, \text{ as opposed to } 0^*, \text{ which means zero or more 0’s.})\)

2. Convert the NFA given in Slide 91 of the slides into a DFA. Show only the reachable states of the DFA.

3. Give regular expressions for the following languages:
   (a) \( \{ w \in \{0,1\}^* | w \text{ ends with either 010 or 11} \} \)
   (b) \( \{ w \in \{0,1\}^* | w \text{ contains no more than three 0’s} \} \)
   (c) \( \{ w \in \{0,1\}^* | w \text{ does not contain 01} \} \)
   (d) \( \{ w \in \{0,1\}^* | w \text{ contains either 110 or 011 (or both)} \} \)

4. Convert the regular expression \((bc)^*(ab\cup b)\) into an NFA using the method from class (which is the same as the method from the book and is different from the method in JFLAP).

5. Problem 1.31.