EXERCISES ON NON-DETERMINISTIC FINITE AUTOMATA

1. Construct NFAs accepting the following languages. Note: your machines must be truly non-deterministic and **have only the specified number of states**.

   a. the language on { 0, 1}:

   L = { w | w is 11 or contains an even number of 0's (as well as some 1's) }

   with at most five states for the language on {0, 1}. Hint: think RE to NFA construction

   b. the language on {0, 1}:

   L = { w on {0, 1} | w finishes with 001 }

   with at most four states and no more than four edges for

   c. the language on { a, b}

   $L = \{ a^n : n \geq 1\} \cup \{ b^m a^k : m \geq 0, k \geq 0 \}$

   with exactly three states.

   d. The language on { a, b}

   $L = \{ a^n : n \geq 0\} \cup \{ b^n a : n \geq 1\}$

   with exactly four states

   e. The language on { a, b}

   $L = \{ abab^n : n \geq 0\} \cup \{ aba^n : n \geq 0\}$

   With no more than five states

2. What is the language accepted by the following NFA: