

Exercise 2. NFAs. Due by class Thursday Oct. 10, 2013

1. Give state diagrams for NFAs with the specified number of states recognizing each of the following languages. (subset of Exercise 1.7 page 84 Sipser)
 1. The language $\{w \mid w \text{ contains the substring } 0101\}$. I.e. $w = x0101y$ for some x and y . Use exactly Five states.
 2. $\{w \mid w \text{ contains an even number of 0s, or exactly two 1s}\}$. Use exactly 6 states.
 3. The language $\{0\}$. Use exactly two states
 4. The language $\{\epsilon\}$. The set of strings with only the empty string. Use exactly one state.

2. Let language $A = \{aa,bb,ab\}$ and language $B = \{aaa,b,ab,bbb\}$ be languages over alphabet $\{a,b\}$ then compute the following
 - A. The reversal of A and the reversal of B
 - B. The complement of B
(restricted to strings of length ≤ 3)
 - C. The Intersection of A and B
 - D. The union of A and B
 - E. A^*
(restricted to strings of length < 7)