Theory of Computation
Homework 4.
Due Date: Wednesday, October 5.

1. Let $A = \{w \mid w \text{ contains an } a\}$, $B = \{w \mid w \text{ begins with a } b\}$, $C = \{w \mid w \text{ contains } ba \text{ as a substring}\}$, $D = \{w \mid w \text{'s next to last character is an } a\}$, $E = \{w \mid \text{the characters in the odd index locations are all } a’s\}$, i.e. the first, third, fifth, etc. characters. Using the methods of Section 2.2.1, give the graphs of NFAs that recognize the following languages.
   i. $A \cup B$.
   ii. $C \circ D$.
   iii. $E^*$.
   iv. Chapter 2, No. 7.iv.

2. i. Construct an NFA recognizing the language $\{b, bab\}^*$.
   ii. Convert this NFA to a DFA recognizing the same language using the method of Section 2.2.2. You need show only the portion of the DFA reachable from the start vertex.

Chapter 2, No. 13(iv, viii, vii) and also for the languages $K = \{wwRw\}$ and $L = \{x \mid x \neq wwR \text{ for any } w \in \{a, b\}^*\}$

Chapter 2, No. 14.