MA/CSSE 474 Day 06 Summary

1. We look at several DFSMs on the slides. This space is for any notes that you may want to write about them.

2. A DFSM for the "missing letter language" is difficult to construct! How many states are needed?

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3. Nondeterminism. Machine may have "transition choices".
    a. If one choice leads to acceptance, accept
    b. Else if all choices lead to halting and rejecting, reject
    c. Else run forever
4. Why is nondeterminism necessary for a PDA that accepts PalEven?

5. In terms of the formal definitions, what is the major difference between the five components of a DFSM and a NDFSM?

6. The two main sources of nondeterminism in an NDFSM:
    a. Transitions labeled by _____

    b. Multiple transitions out of the same state labeled by _____

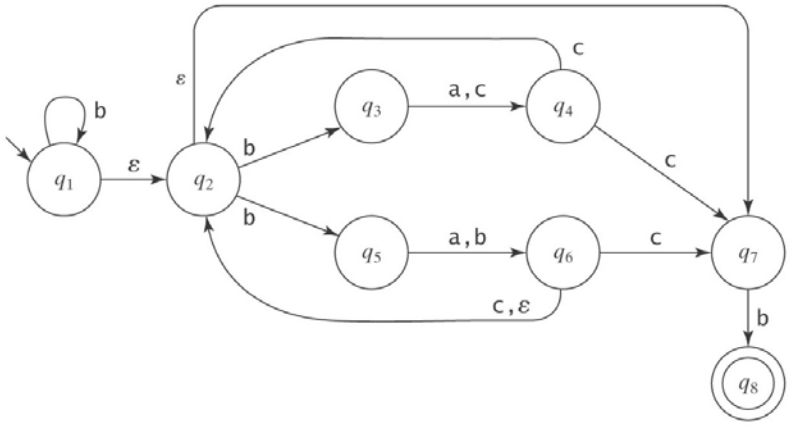
7. Some uses of Nondeterminism in FSM design:
    a. Optional substrings
    b. Matching a pattern in the middle of a string
    c. Matching any of several possible patterns
    d. Matching "from the end of the string"

8. Example: A NDFSM for
   $L = \{w \in \{0, 1\}^* : w$ is the binary encoding of a positive integer that is divisible by 16 or is odd$\}$

9. For practice later:
   $L_1 = \{w \in \{a, b\}^*$: aa occurs in $w\}$, $L_2 = \{x \in \{a, b\}^*$: bb occurs in $x\}$, $L_3 = L_1 \cup L_2$

   Design NDFSMs for these languages.

10. Know how to compute the epsilon-closures of the states of a NDFSM.
    Example:



11. You should understand and be able to apply the algorithm ***ndfsmtodfsm.*** You will get practice with this in HW3.