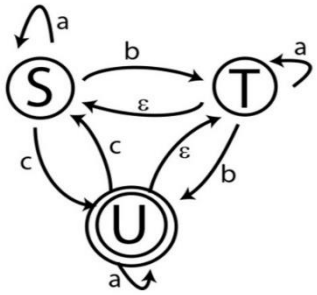
CS 383
HW 2

Due in class Wednesday, September 25

Again, you can do this one on paper if you do it neatly and legibly.

1. Here is an ε-NFA. Convert it to a DFA and find all of the strings of length 2 accepted by it. S is the start state.



2. Design an ε-NFA for the set of strings consisting of either 01 repeated 1 or more times or 010 repeated 1 or more times.
3. Give a regular expression for the set of strings over the alphabet {a,b,c} containing at least one a and at least one b.
4. Give a DFA for the set of strings with an even number of zeros.
5. Give a regular expression for the set of strings with an even number of zeros.
6. Describe in English the language denoted by the regular expression $(1+\varepsilon)(00^*1)^*0^*$
7. Suppose we have a finite automaton with no transitions into the start state and none out of the final state. This automaton accepts language $\mathcal{L}$. If we modify the automaton by adding an ε-transition from the final state to the start state, what language will it accept?
8. Convert the regular expression (0+1)(01)* into an ε-NFA using the construction we developed in class.
9. Convert $(1+\varepsilon)(00^*1)^*0^*$ into an ε-NFA any way you wish.
10. Convert the following DFA into a regular expression using the construction we developed in class. S is the start state.