1. Here is an \( \varepsilon \)-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 \( \varepsilon \)-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 \( \varepsilon \)-transition from the final state to the start state, what language will it accept?
8. Convert the regular expression \((0+1)(01)^*\) into an \( \varepsilon \)-NFA using the construction we developed in class.
9. Convert \((1+\varepsilon)(00^*1)^*0^*\) into an \( \varepsilon \)-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.