1. For the first problem, let $M$ be the DFA with state diagram shown here:

(a) Give two examples of strings that $M$ accepts.

(b) Give two examples of strings that $M$ does not accept.

(c) Give the formal definition of $M$ as a 5-tuple $(Q, \Sigma, \delta, s, F)$, specifying completely the components of the 5-tuple.

2. Draw the state diagram of a DFA $M$ which recognizes the language

$$L = \{w : |w| \geq 1 \text{ and } w \text{ has the same first and last symbols}\}.$$  

(For example, 1 and 010 are in $L$, but 01 and 110 are not.)