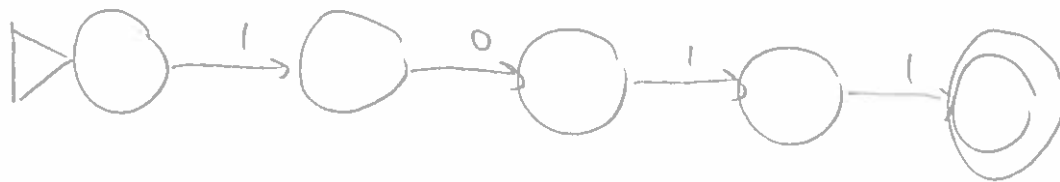
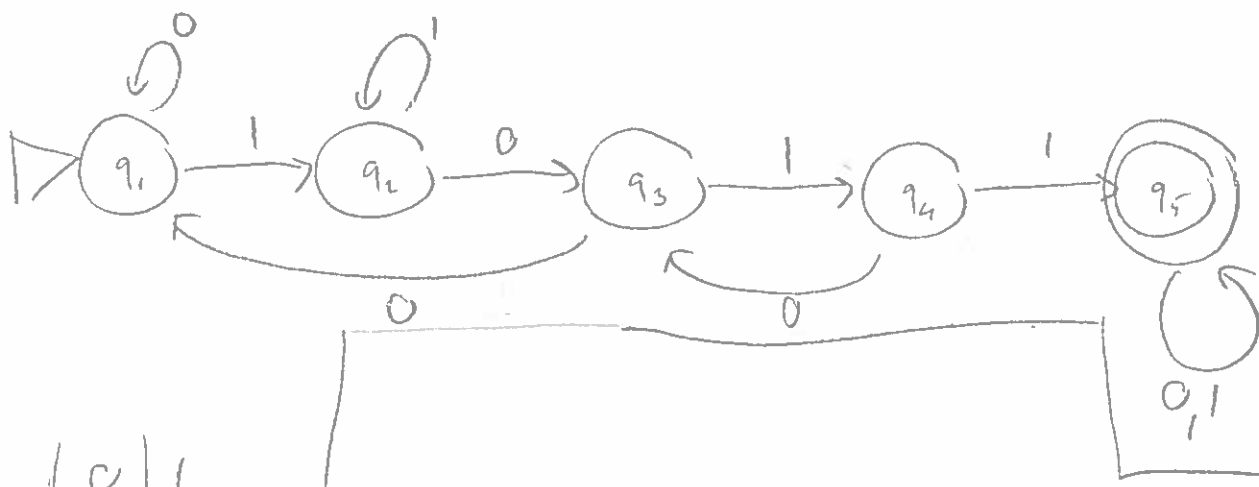


1)



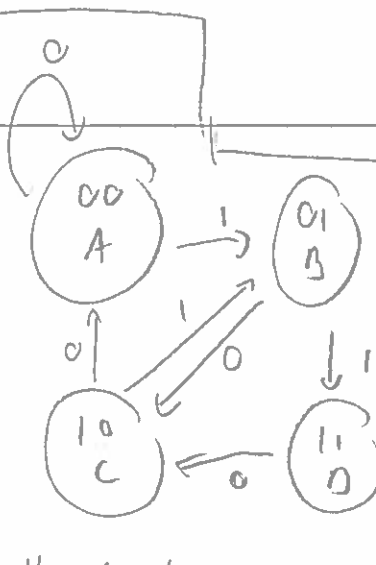
2)



	0	1
q <sub>1</sub>	q <sub>1</sub>	q <sub>2</sub>
q <sub>2</sub>	q <sub>3</sub>	q <sub>2</sub>
q <sub>3</sub>	q <sub>1</sub>	q <sub>4</sub>
q <sub>4</sub>	q <sub>3</sub>	q <sub>5</sub>
q <sub>5</sub>	q <sub>5</sub>	q <sub>5</sub>

6)  $0^*10^*$

3) No. For  $\{a, b, c, d\}$



You can represent letters  $\{a, b, c, d\}$  as  $\{00, 01, 10, 11\}$  ..

binary, and build the following automata w/ the same # of nodes.

The same can be done for every # of chars.  
For example, for 256 chars, a byte would work.

We could create 256 nodes and label them in binary and draw the arrows such that you append 0 or 1 to the the end of the node # and draw the next character. Example: 1110001  $\xrightarrow{0}$  11100010