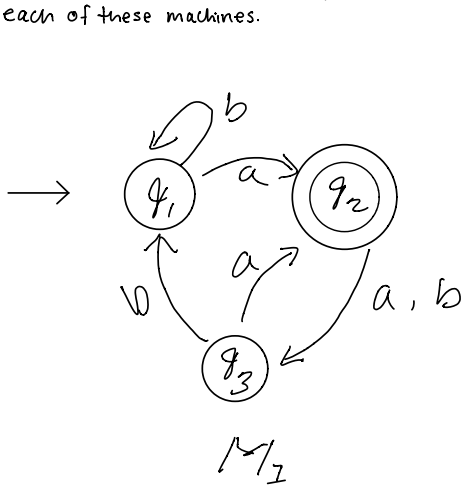
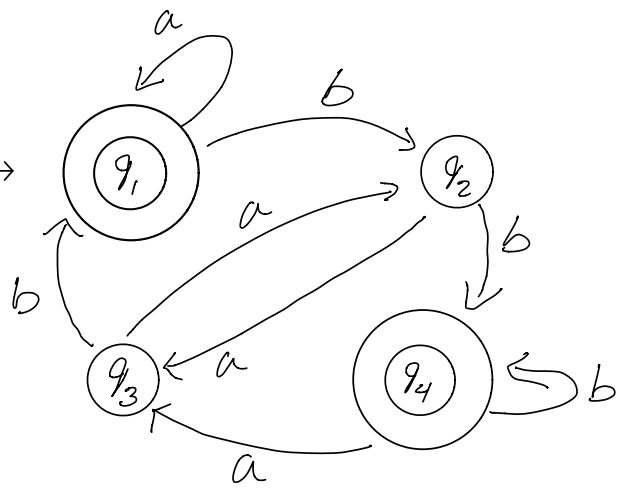
1.1) The following are the state diagrams of two DFAs, M_1 and M_2. Answer the following questions about each of these machines.



M_1



M_2

a.) What is the start state?

$M_1 = q_1$

$M_2 = q_1$

b.) What is the set of accept states?

$M_1 = q_2$, because q_2 is in double circles which indicates an accept state

$M_2 = q_1$ and q_4, same reason as M_1.

c.) What sequence of states does the machine go through on input aabb

$M_1 = q_1 \xrightarrow{a} q_2 \xrightarrow{a} q_3 \xrightarrow{b} q_1 \xrightarrow{b} q_1$

$M_2 = q_1 \xrightarrow{a} q_1 \xrightarrow{a} q_1 \xrightarrow{b} q_2 \xrightarrow{b} q_4$

d) Does the machine accept the String aabb

$M_1 = q_1 \rightarrow q_2 \rightarrow q_3, q_1$

q_1 is not an accept state, therefore, M_1 does not accept the string aabb

$M_2 = q_1, q_1, q_1, q_2, q_4$

q_4 is an accept state, therefore, M_2 does accept the String aabb

e.) Does the machine accept the String ε?

M_1 = No because q_1 is not an accept state.

M_2 = Yes because q_1 is an accept state.