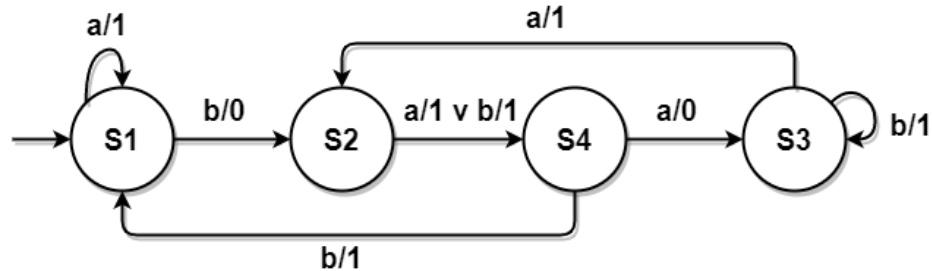


Problem #4 (Automata and Control Path 9 pts)

- a) What is the main difference between Moore and Mealy finite state machines? (1 pt)



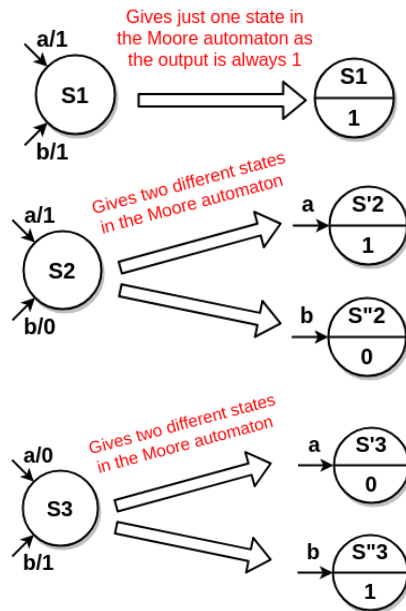
- b) Is the following automaton a Moore or Mealy ? Explain. (1 pt)
 c) Draw the state transition table of the automata (2 pts)
 d) Convert the automaton into an equivalent Moore machine (5 pts)

Solution:

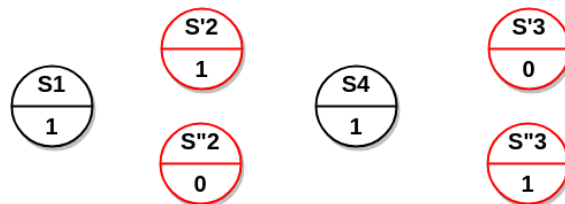
- a) The main difference resides in that in Moore finite state machines, the output depends only on the current state, while with Mealy, the output depends both on the current state and current inputs.
 b) Mealy automaton
 c) Here is the transition table:

δ/λ	a	b
$S_f = S1$	S1/1	S2/0
S2	S4/1	S4/1
S3	S2/1	S3/1
S4	S3/0	S1/1

- d) Let us convert the automaton into an equivalent Moore machine.
 We start by identifying the states from the automaton with more than one incident edge in order to check if new states will be inserted. The following images summarize the findings:



S1 and S3 generate each 2 new states. Now we have the following states:



The corresponding Moore automaton is therefore:

