Quiz: Finite Automata with output: Mealy Machine and Moore Machine Results for Aryan Jigneshbhai Bhagat (he/him/his)

Correct answers are no longer available.

Score for this attempt: 60 out of 60
Submitted Mar 30 at 10:37pm
This attempt took 19 minutes.

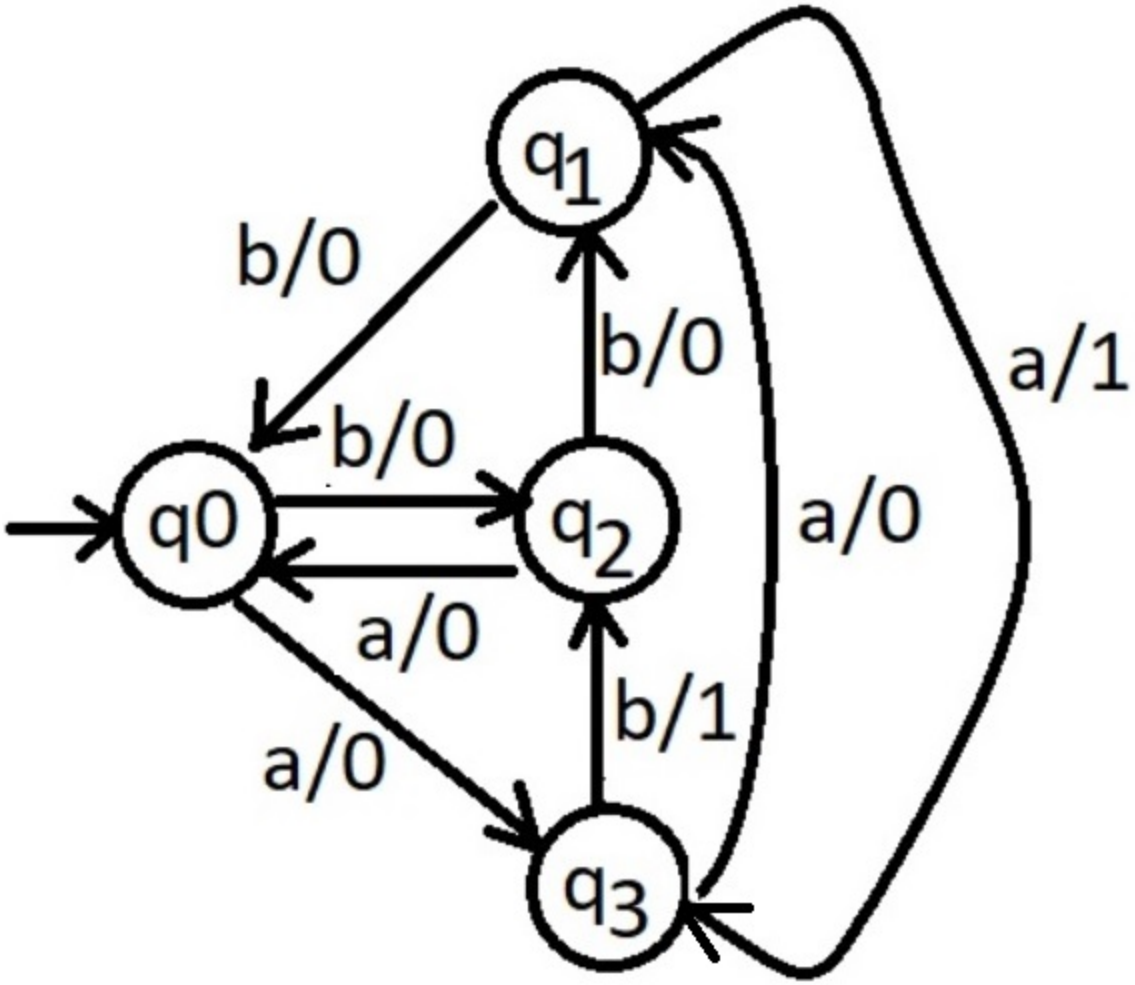
Question 1
10 / 10 pts

Assume you have the following Mealy machine: $(Q,\Sigma,q_0,\delta,\Delta,\lambda)$ where $\Sigma=\{0,1\}$ is the input alphabet set, δ is the transition function. $\Delta=\{a,b,c\}$ is the output alphabet set, λ is the output function, and $Q=\{q_0,q_1,q_2\}$ is the set of all states. We convert this Mealy Machine to Moore machine. In the Moore machine, assume that Q' is the set of all states in the Moore machine. Which one(s) can NOT be the cardinal number of Q' ?

- [ ] 7
- [ ] 8
- [ ] 9
- [x] 10
- [x] 11
- [x] 12
- [ ] 3

Question 2
10 / 10 pts

Assume that you are converting Mealy machine to a Moore machine using the following transition diagram:



In the resulting Moore machine, how many states would you have in your diagram?

6

In the resulting Moore machine, how many total transitions would you have in your diagram? 12

Answer 1:

6

Answer 2:

12

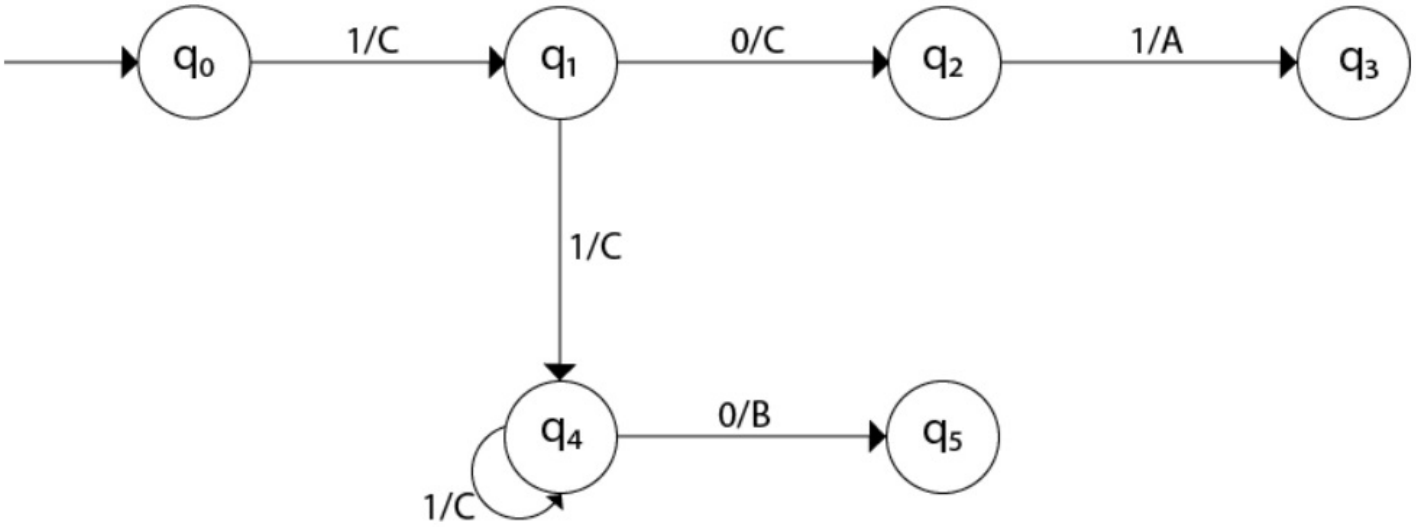
Question 3

10 / 10 pts

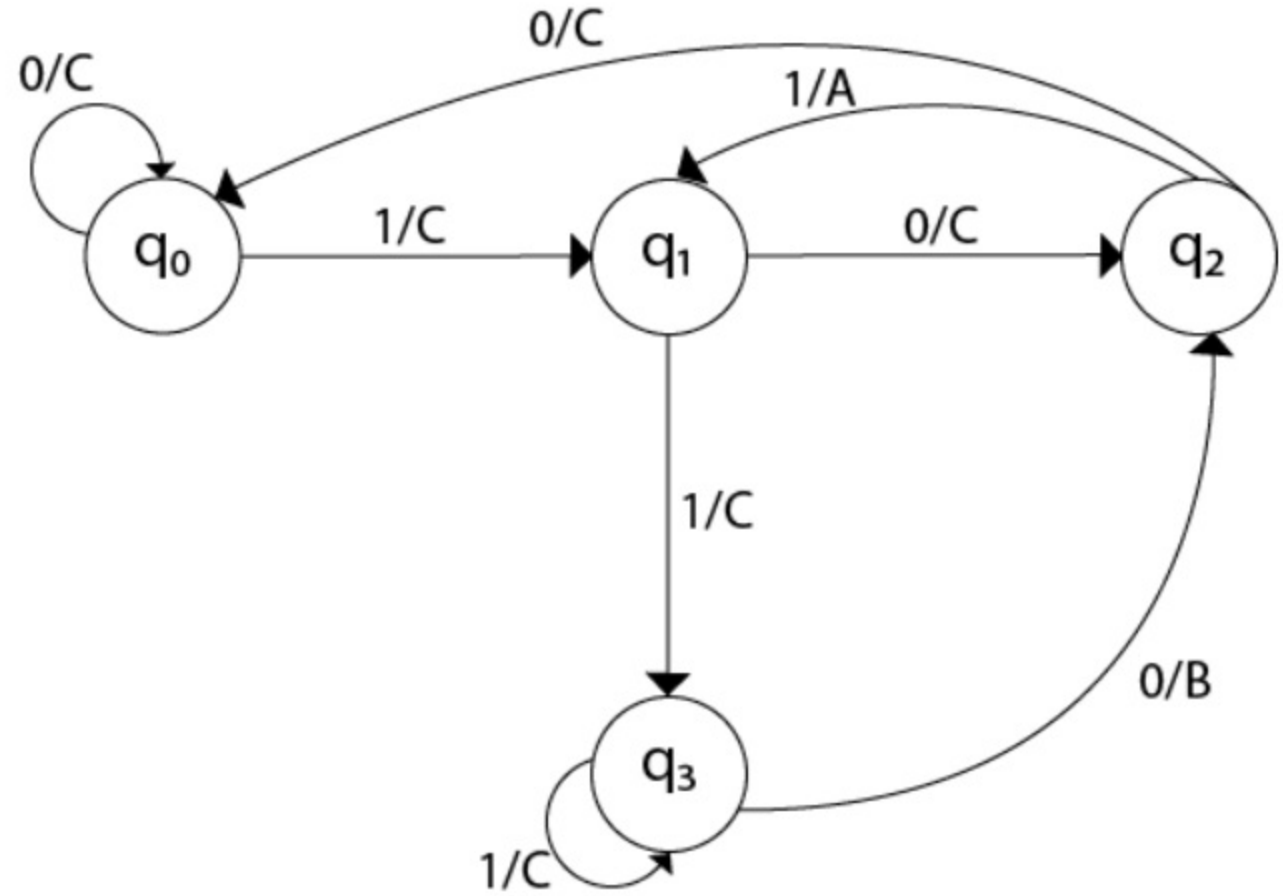
You are to design a Mealy machine to generate output A with input string ending in 00,

output B with input string ending in 11 and output C in all other situations. Which one(s) can be the correct Mealy machine?

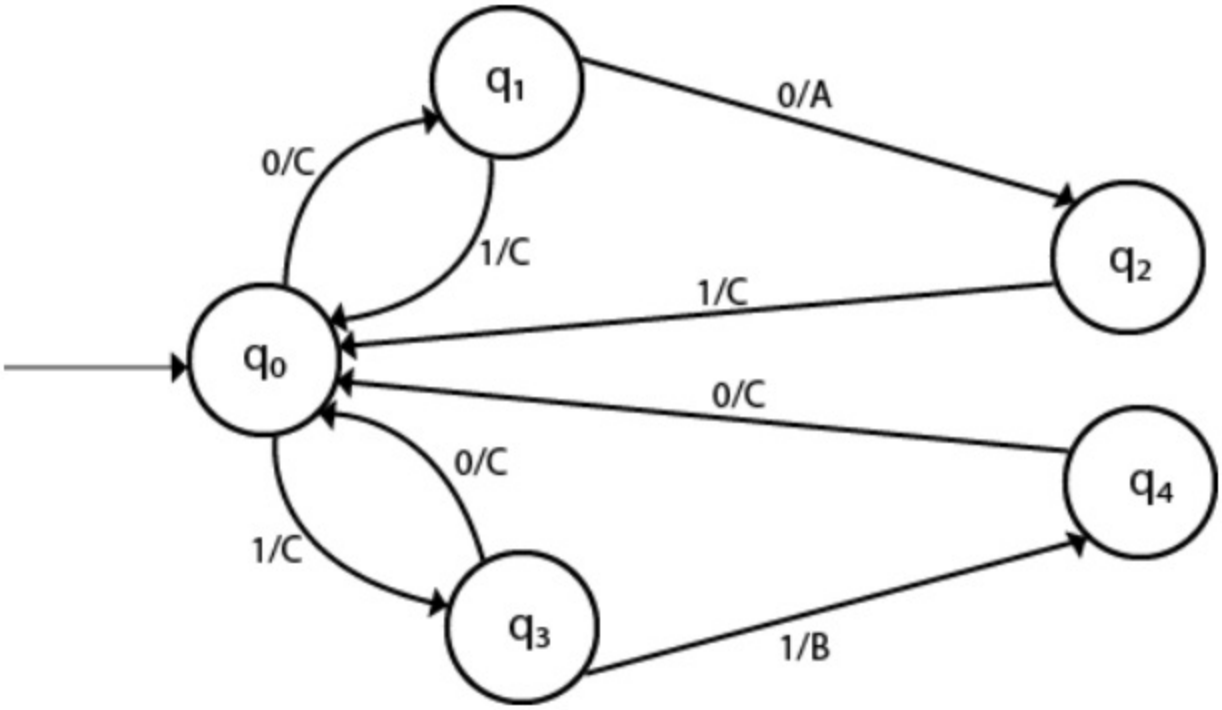
Machine 1:



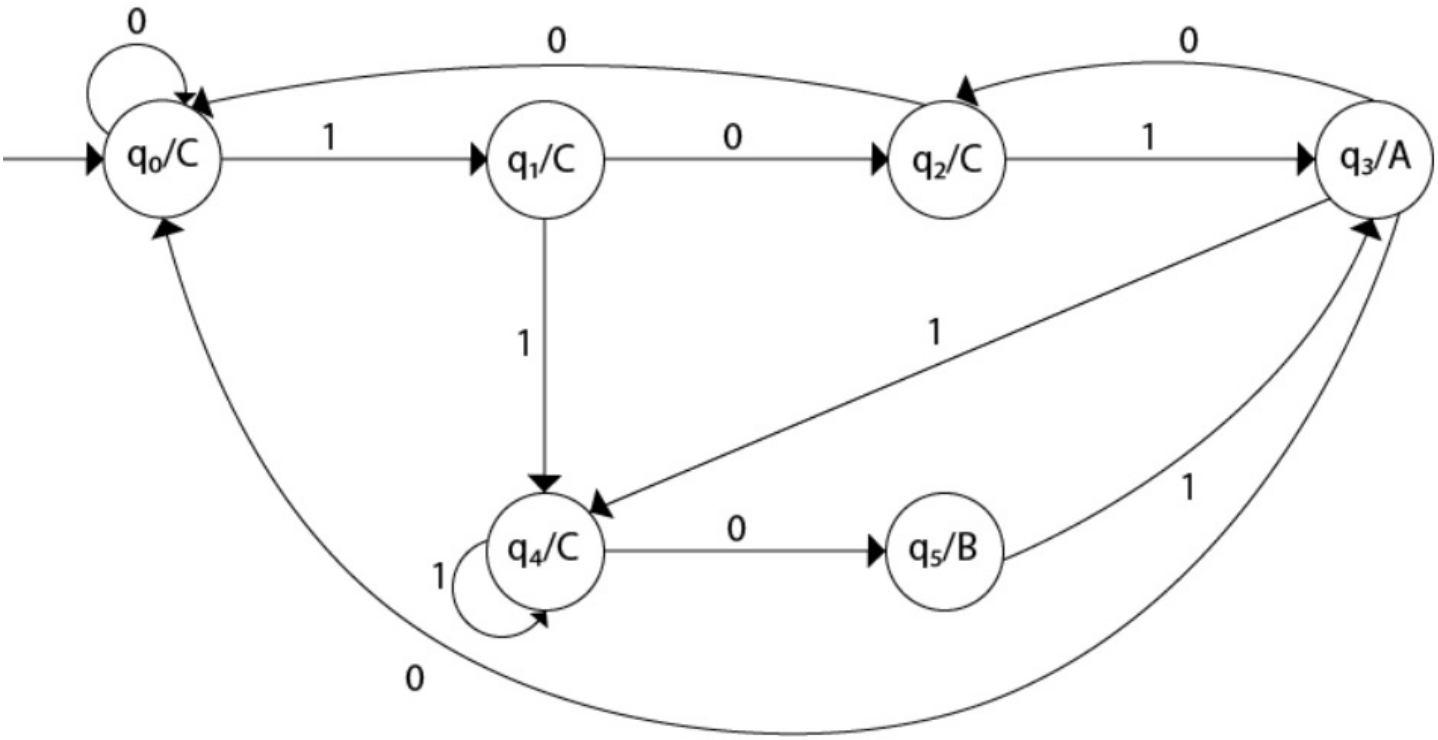
Machine 2:


0/C
0/C
1/A
q0
1/C
q1
0/C
q2
1/C
0/B
q3
1/C

Machine 3:


q1
0/A
0/C
1/C
q2
1/C
q0
0/C
0/C
q4
1/C
q3
1/B

Machine 4:



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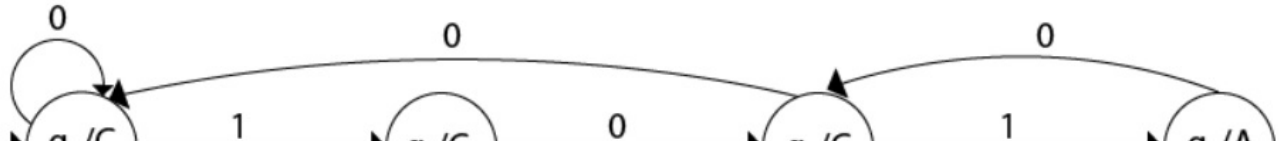
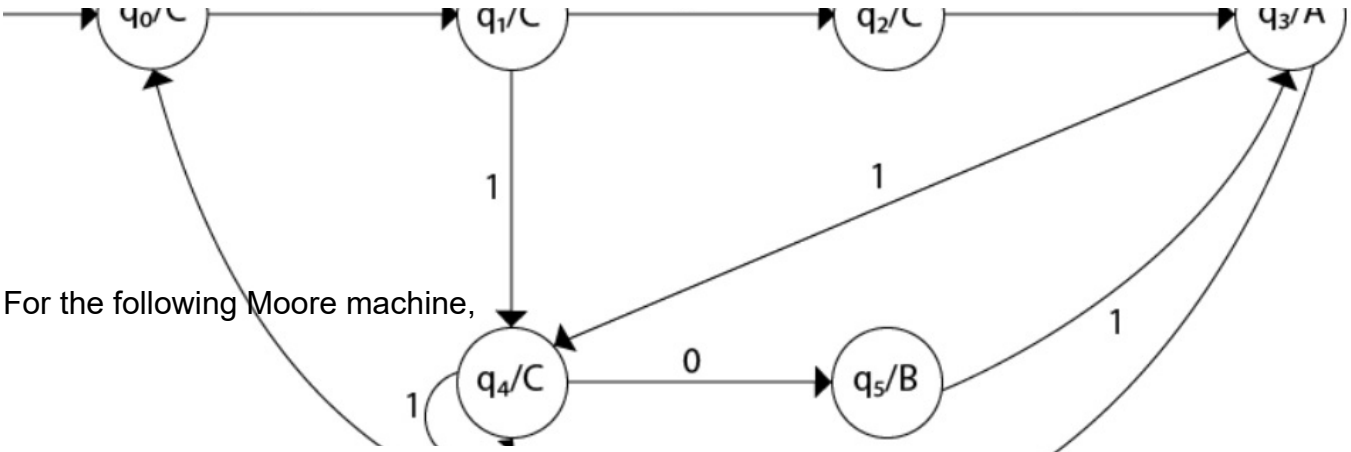
- [ ] Machine 1
- [ ] Machine 2
- [x] Machine 3
- [ ] Machine 4

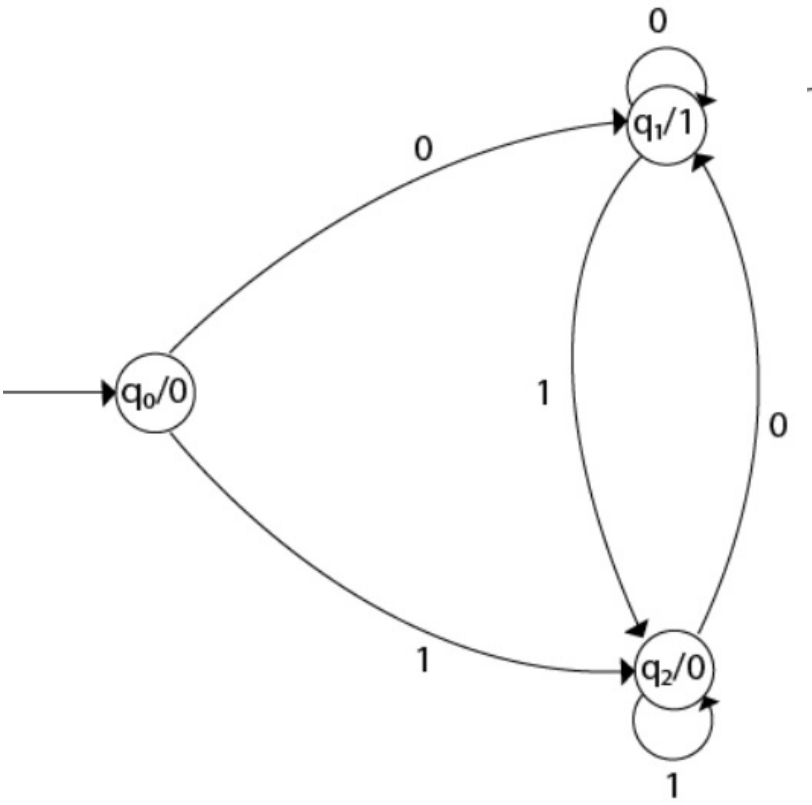
Question 4
10 / 10 pts

In the following Moore machine, the output CCCBACA has been generated. What is one possible input string?



For the following Moore machine,





if the input string is 1010111, what would be the output string?

00101000

Question 6

10 / 10 pts

Assume that we have the following 6-tuple represing a finite automaton with output: $(Q,\Sigma,q_0,\delta,\Delta,\lambda)$ where Σ is the input alphabet set, δ is the transition function. Δ is the output alphabet set and λ is the output function. Which one(s) are correct?

- [x] For a Mealy machine type: $\delta: Q \times \Sigma \rightarrow Q$
- [x] For a Moore machine type: $\delta: Q \times \Sigma \rightarrow Q$
- [x] For a Mealy machine type: $\lambda: \Sigma \times Q \rightarrow \Delta$
- [ ] For a Moore machine type: $\lambda: \Sigma \times Q \rightarrow \Delta$
- [x] For a Moore machine type: $\lambda: Q \rightarrow \Delta$
- [ ] For a Mealy machine type: $\lambda: Q \rightarrow \Delta$

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