

Syntactic Analysis – Flipped Lab

Your names here:
(alphabetical by last name, place a star by the typist's name)

You are working on this as a group!!

Complete one problem at a time

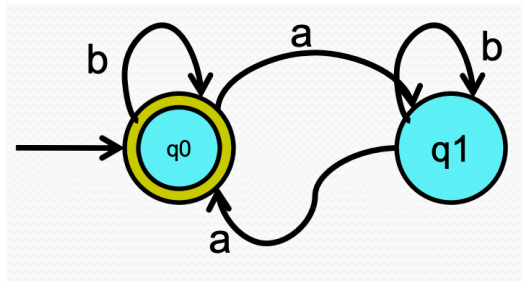
Have the Instructor or TA sign off **after you complete each** problem so you may move on.

You will be graded on your overall completion.

You **are allowed** notes, books, etc...

DFA to Regular Expression

1. Convert the following DFA to a regular expression which represents the DFA. **Hint: Final answer has an OR (|) in it.**



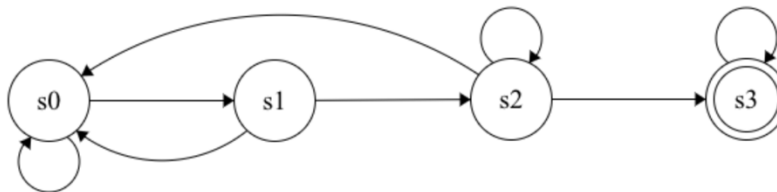
Please write the regular expression here.

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Label the DFA

2. You have been given a DFA with the alphabet $\Sigma = \{a, b, c\}$. The DFA doesn't have any transition labels on the edges. Label the DFA correctly so that it accepts any string with "aab" as a substring (note this is not a dead state since it is looking for a substring). **There should not be any redundancy in labeling the transitions.** (s0 is the start state)



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Construct DFA

3. Using **JFlap**, create a DFA that accepts the language $L = \{w: w \text{ contains at least five 1s}\}$, with the alphabet $\Sigma = \{0, 1\}$.

Some test cases:

01111100
1010101011
11111
11110000011

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Regular Expression to DFA

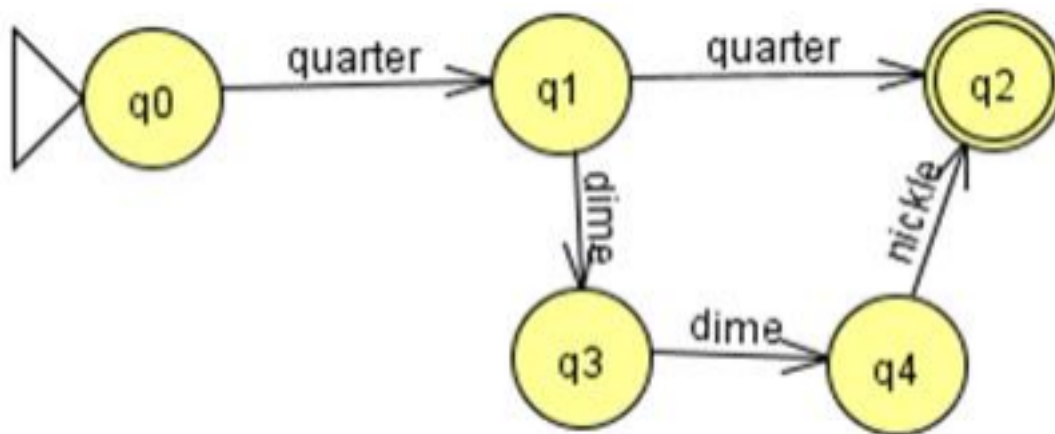
4. Using **JFlap** create a DFA for the given regex expression, $x^*(yz^?)^+$. Run the following input strings on this DFA.
- > xxxyyy (Accepted)
 - > yzyzyyz (Accepted)
 - > y (Accepted)
 - > yzy (Accepted)
 - > xyzxyzxyz (Rejected)
 - > xx (Rejected)
 - > xyx (Rejected)
 - > xyzz (Rejected)

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Finish DFSM

5. Finish the DFSM below, for all possible ways to reach 50 cents using US coins (except for pennies). You might want to label transitions as follows: Q for quarter, D for dime and N for nickel. Show your answer in **JFlap** and save it as "FiftyCents.png".

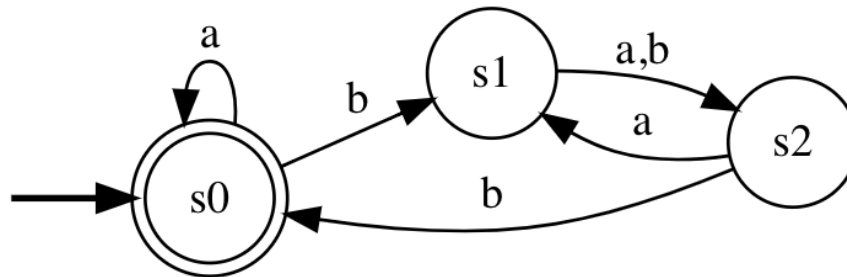


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DFA Table

6. Give the table of transitions for the given DFA.



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