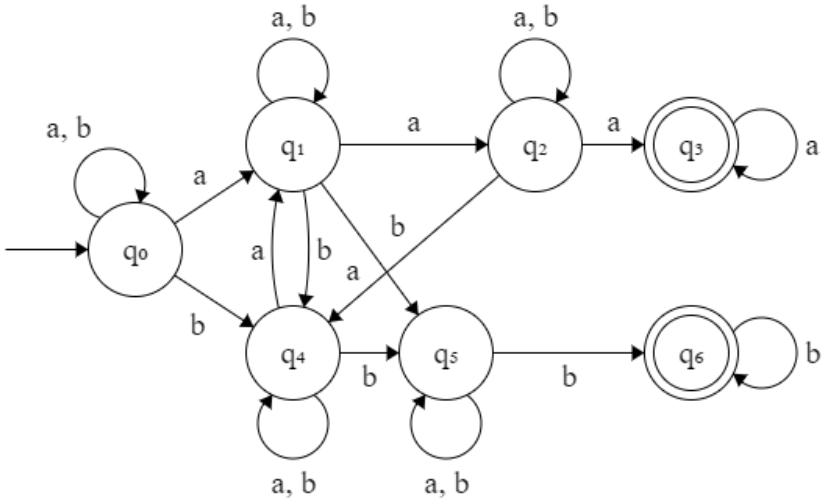
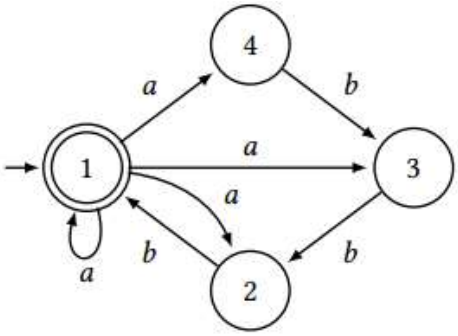
Rhea Mae Edwards

CS 321: Homework #2

1. {w ∈ {*a*, *b*}* | the last character of *w* appears 3 time in *w*} *Note:* <u>At least</u> 3 times.

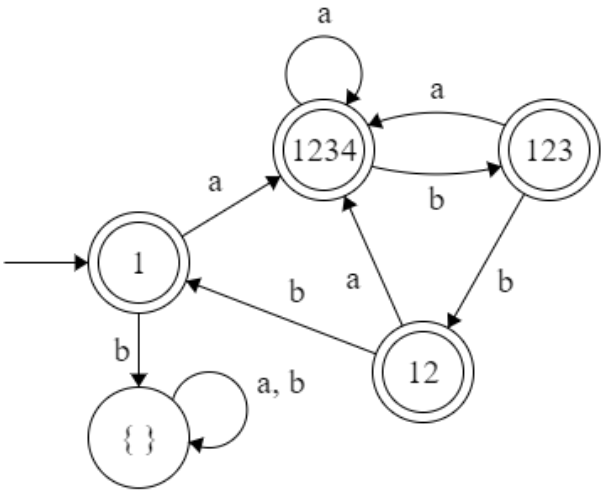


2. NFA:



DFA: (*Notation Note:* For example, {1, 2, 3, 4} is written as 1234 and so on)

I'm aware it's supposed to be a power set represented for each state.
There is just not enough room to actually write the correct notation within the state bubbles.



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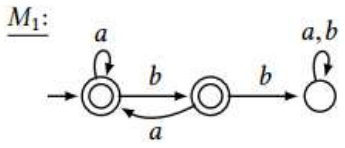
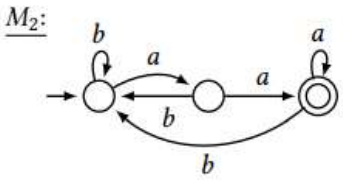
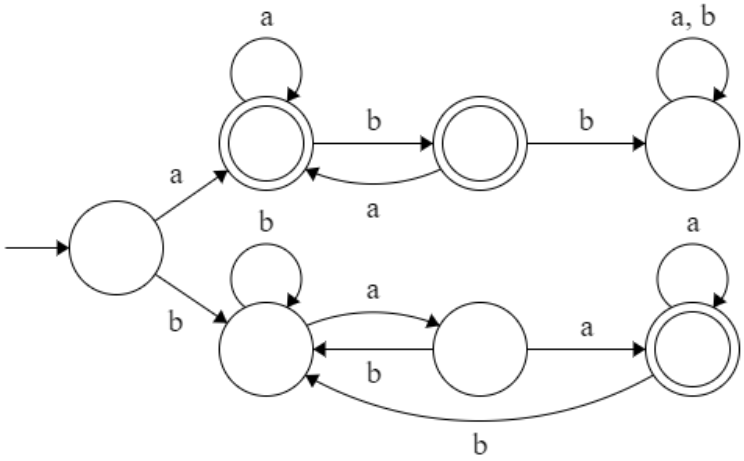
3. DFA that accepts all strings that are in either $L(M_1)$ or $L(M_2)$, but not both.





DFA:



4. Show that the following language is regular:

$$\left\{ w \in \{0,1\}^* \;\middle|\; \begin{array}{l}\text{there is a way to insert the substring 011 (once) into } w \\ \text{so that the result is a multiple of 3 in binary}\end{array} \right\}$$