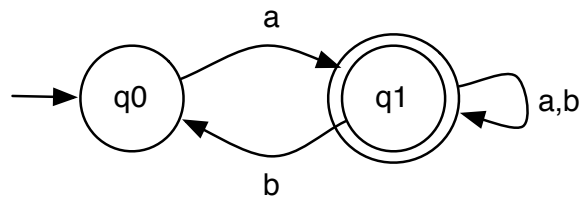


CSC236 Tutorial Exercises, July 19

1. Give a DFA accepting the set of all strings beginning with a 1 that, when interpreted as a binary integer, is a multiple of 3. For example the strings 11, 110, and 1001 are in the above language, but the strings, 1, 101, 111, 01 are not. Prove by state invariant that your DFA is accepts the requested language.
2. Let the alphabet be $\Sigma = \{a, b\}$, consider an FSA M_1 :



- (a) Is this a DFA or an NFA? Why?
- (b) Write down the language \mathcal{L} that it represents (a sentence describing all strings included in the language \mathcal{L})
- (c) Write down the complement $\overline{\mathcal{L}}$ of \mathcal{L} , i.e. $\overline{\mathcal{L}} = \Sigma^* - \mathcal{L}$ in one sentence
- (d) Draw an FSA for $\overline{\mathcal{L}}$