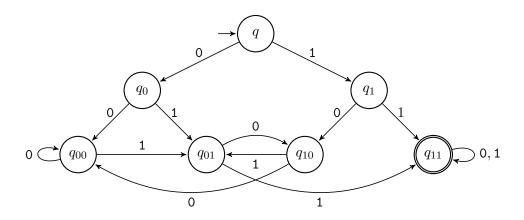
CSCI 3130 Formal Languages and Automata Theory

Fall 2019

Week 6 Tutorial Session

1. This problem concerns the following DFA.



- (a) Run the minimization algorithm on this DFA. Show the table of pairs of distinguishable states at the end of the algorithm. Also draw the minimized DFA.
- (b) Show that every pair of states in the minimized DFA is distinguishable.
- (c) Convert the minimized DFA into a regular expression using the conversion algorithm from class. Show the preprocessing step and how the NFA changes after each state is eliminated.
- 2. Show that the following language is irregular using the pumping lemma.

 $L = \{ w \in \{0, 1\}^* \mid w \text{ contains the same number of 0s and 1s} \}$