CSCI 338
Homework 1 Solutions

Assigned 8/30/2022, due by start of class (3:05 pm) on 9/6/2022. Please submit this assignment to the appropriate dropbox on D2L. You must follow the collaboration policy detailed on the course website.

Problem 1 (5 points). Assuming the alphabet is $\{0, 1\}$, build a DFA that recognizes the following language: $\{w : |w| = 3$ and the third symbol is a $0\}$. Note: $|w|$ denotes the length of string w (i.e. the number of characters in it). For example, when $w = 1101$, $|w| = 4$.

Problem 2 (5 points). Assuming the alphabet is $\{0, 1\}$, build a DFA that recognizes the following language: $\{w : |w|$ is divisible by $3\}$.

Problem 3 (5 points). Assuming the alphabet is $\{0, 1\}$, build a DFA that recognizes the following language: $\{w : w$ contains at least two 1s and at most one $0\}$.

Problem 4 (5 points). Succinctly describe the language of the following DFA: