CS 420 Spring 2019
Homework 1

Due February 6

1. Give DFAs that recognize the following languages

   (a) $\{w \in \{0,1\}^* | w$ exactly three 1's$\}$.

   (b) $\{w \in \{0,1\}^* | w$ contains 001 as a substring$\}$.

   (c) $\{11, 110\}^*$.

2. Using the complementation construction and one of the DFAs from Exercise 1, give a DFA that recognizes the language

   $$\{w \in \{0,1\}^* | w \text{ does not contain 001 as a substring}\}.$$

3. Let $L = \{w \in \{0,1\}^* | w$ ends with a 0 or has even length$\}$. Starting with DFAs for two simpler languages, use the union construction to give a DFA that recognizes L.