CSC236 – Tutorial 10: Constructing Finite Automata

1. Recall the language over $\Sigma = \{0, 1\}$ defined as $\{w \mid w$ has an even number of 1’s$\}$. Design a DFA accepting this language, and then state and identify state invariants for your DFA.

2. For each of the following languages over $\Sigma = \{0, 1\}$, design a DFA that accepts the language. As an exercise for later, try determining the state invariants for your DFAs.
   
   (a) All strings which begin with 011 (i.e., prefix 011).
   (b) All strings whose third letter is 1.
   (c) All strings which, when interpreted as a binary number, are even.
   (d) All strings which contain 011 (i.e., substring 011).
   (e) All strings which do not contain 011.