CS 580 Homework 2

Due: September 6th 4:10 PM, 2023

1. Draw the transition diagram of a DFA equivalent to the following regular expressions.

     a. $ab + (a + bb)^*$.

     b. $(aa)^* + (aaa)^*$.

For the remaining problems, let $\sum = \{0, 1\}$.

  2. Draw the transition diagram of a DFA that accepts each of the following languages.

     a. All strings beginning with a 1 that, interpreted as a the binary representation of an integer (most significant bit on the left), are congruent to 3 mod 5 or 4 mod 5.
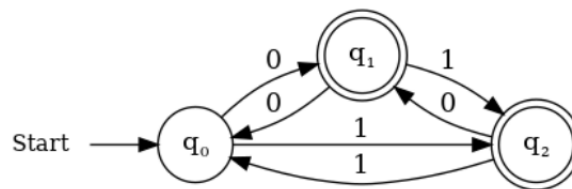
  b. All strings of length at least four whose final three symbols contain an even number of 1's.

  3. Give a regular expression denoting the language of all strings that do not contain 00 as a substring.

  4. Describe in English the language denoted by the regular expression $0^*1(0 + 10^*1)^*$.

  5. Give regular expressions equivalent to each of the DFAs below.

     a.

     b.