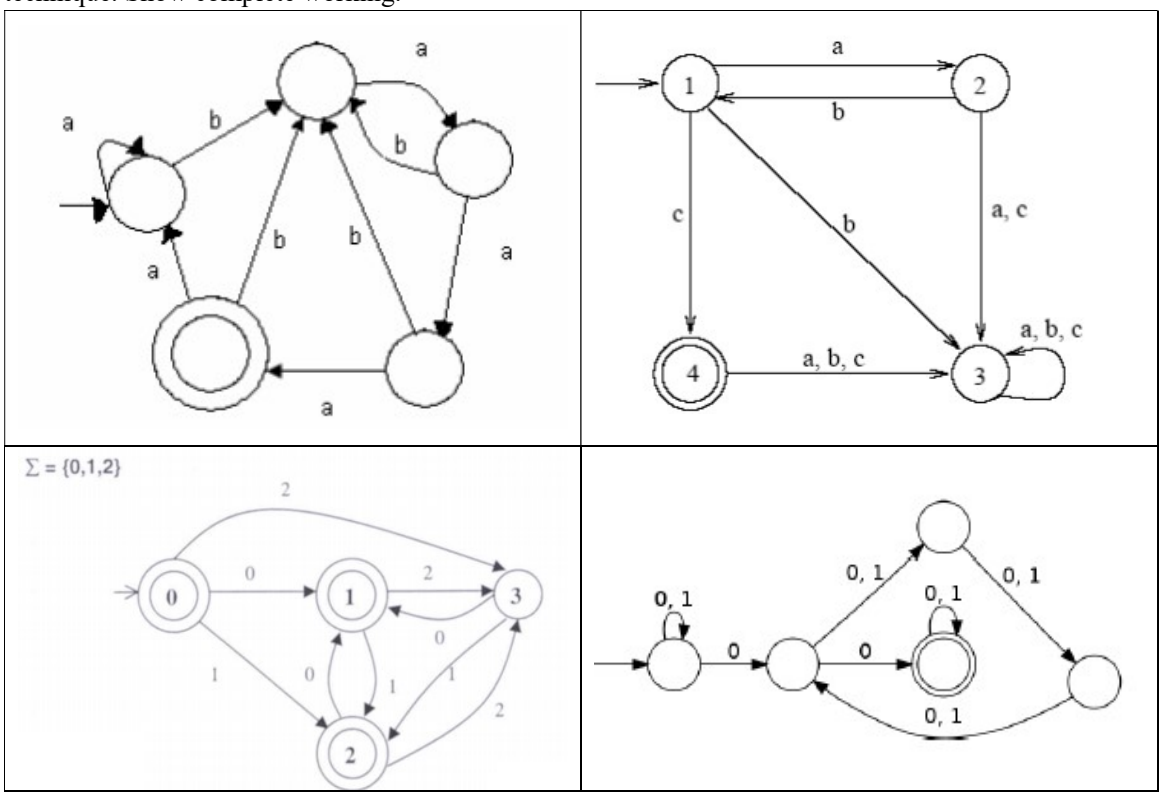
Assignment 2 – CS 301 - Theory of Automata – Spring 2019

Total Marks: 100

Due: 20th February, 2019 (beginning of class)

Note: Late submissions (till Friday 12 PM) will have 25% deduction. Any assignment submitted after that may not be accepted. Solution to this Assignment will be uploaded on Friday after 12 PM

1. [40] Find the regular expression corresponding to the following FAs, through the state elimination technique. Show complete working.



2. [30] Draw an FA recognizing the language corresponding to the following regular expressions:
   a. (0 + 1)*0
   b. (11 + 10)*
   c. (1 + 110)*0
   d. (111 + 100)*0
   e. 1(01 + 10)* + 0(11 +10)*
   f. 1(1+10)* +10(0 + 01)*

3. [20] Give regular expressions that generate each of the following languages. In all cases, the alphabet is Σ = {0,1}
   a. All words such that length of the word is odd
   b. All words such that there are odd number of 0's
   c. All words such that there are exactly 2 0s or exactly 2 1's.
   d. All words ending in double letter (words contain double letter if they end in 00 or 11)

4. [10] Construct an NFA, and then a DFA for the language accepting the language L that corresponds to the following regular expression: (11 + 110)0*