Questions

1. For Σ = {a,b}, construct DFA's that accept the sets consisting of
a. all strings with exactly one a
b. all strings with at least one a
c. all strings with at least one a and exactly two b's
d. all the strings with exactly two a's and more than two b's
e. accepting strings ending with 'abb'
f. accepting strings ending with 'abba'

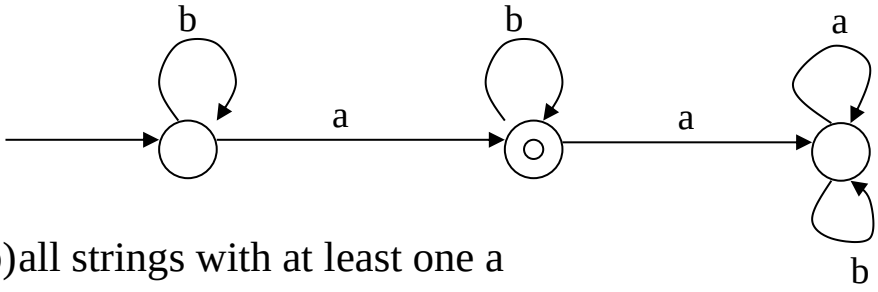
2. For Σ = {0,1}, construct DFA's that accept the sets consisting of
a. string which starts with 1 and ends with 0.
b. accepts the only input 101.
c. even number of 0's and even number of 1's
d. the strings with an even number of 0's followed by single 1.
e. strings ending with '01' over input
f. strings ending with '0011'

Solutions

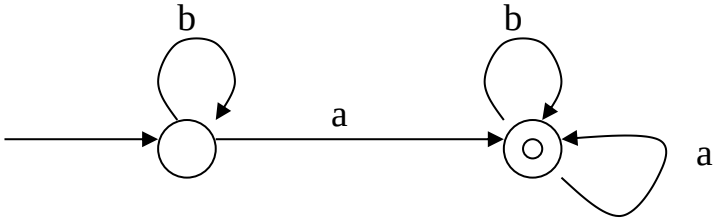
Question 1

For Σ = {a,b}, construct DFA's that accept the sets consisting of

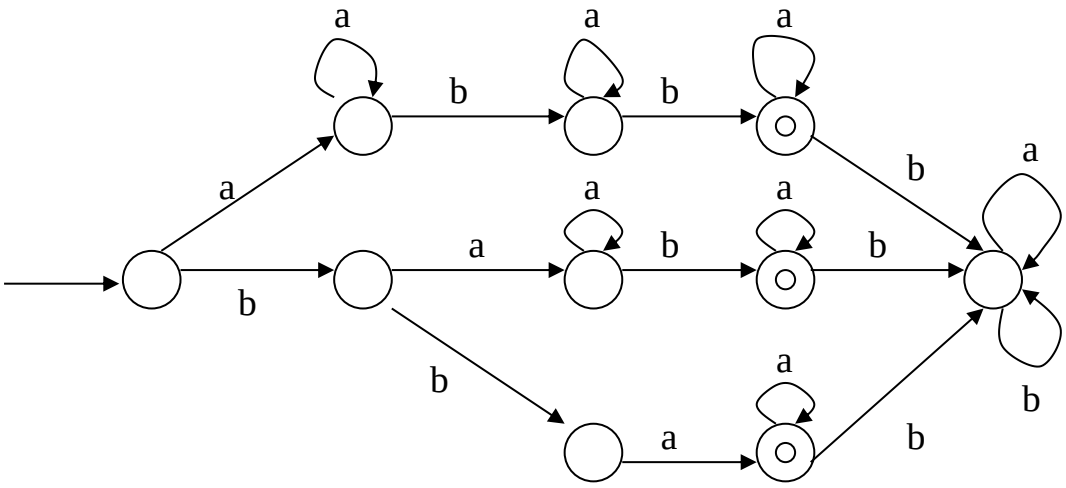
(a) all strings with exactly one a



(b) all strings with at least one a



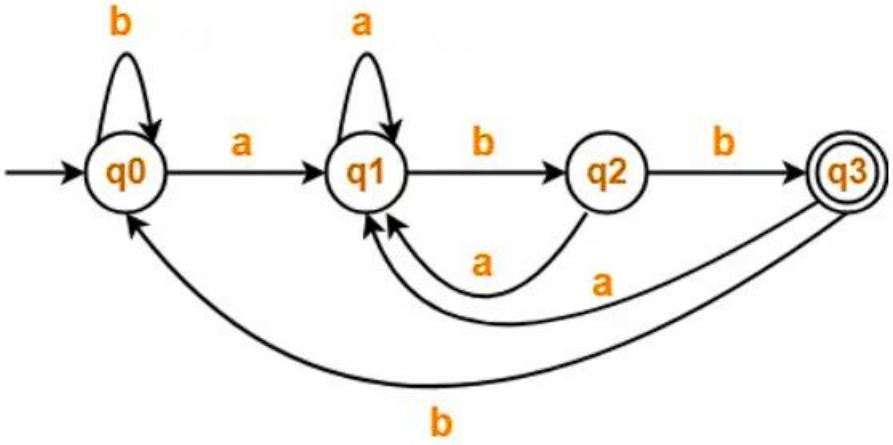
(c) all strings with at least one a and exactly two b's



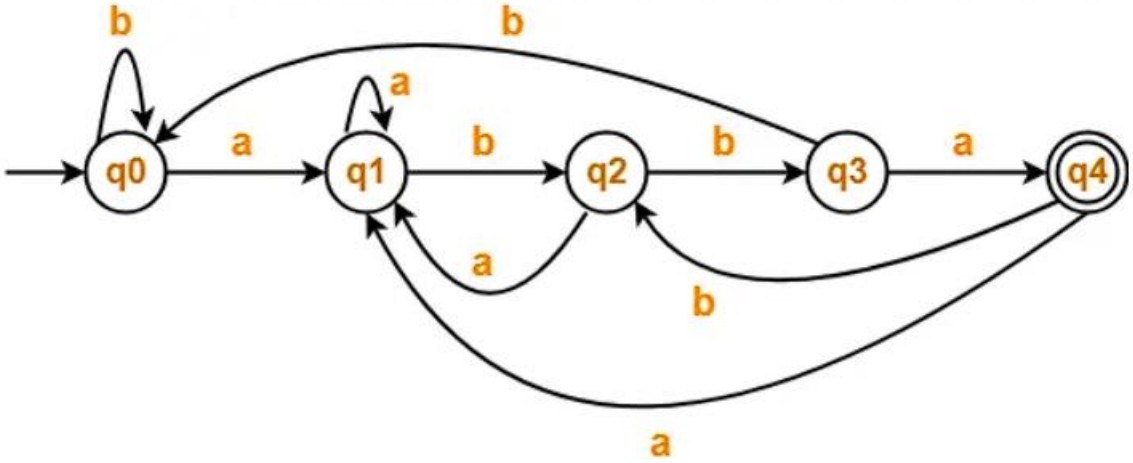
(d) all the strings with exactly two a's and more than two b's

The automaton is constructed with similar techniques as above.

(e)

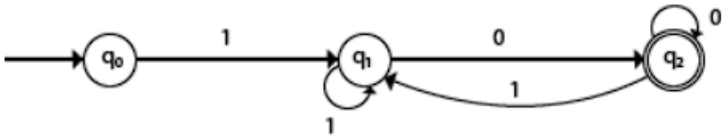


(f)

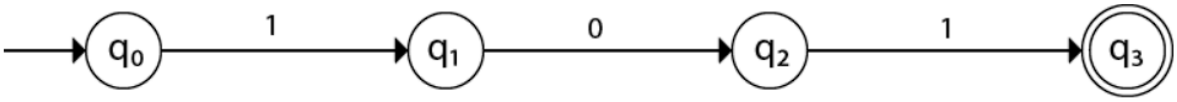


Question 2

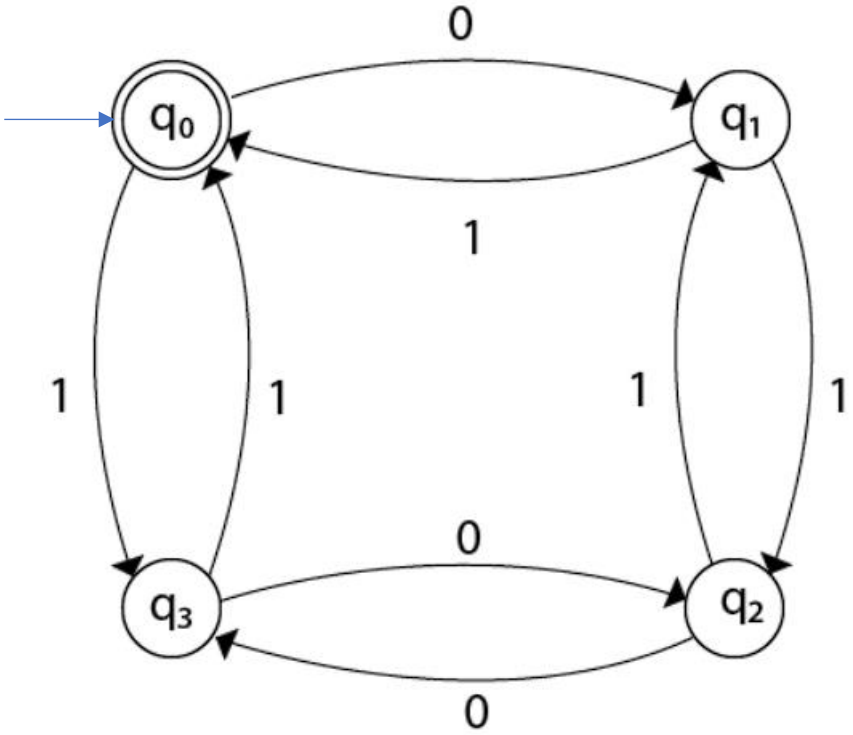
a.



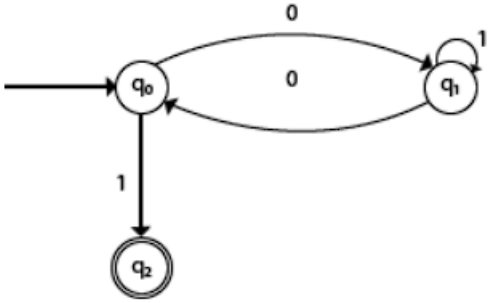
b.



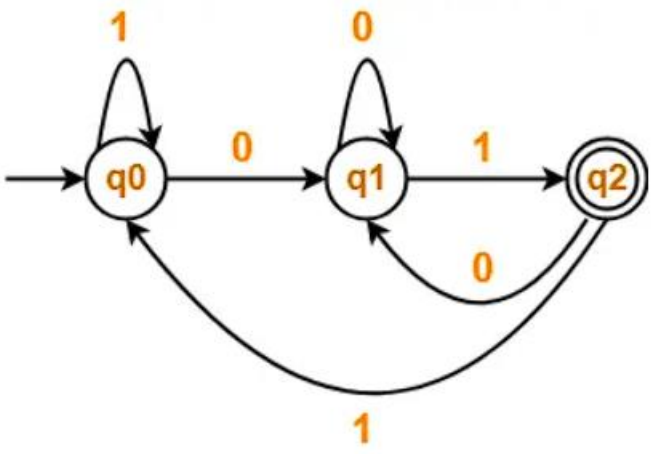
c. even number of 0's and even number of 1's



d. the strings with an even number of 0's followed by single 1.



e.



f.