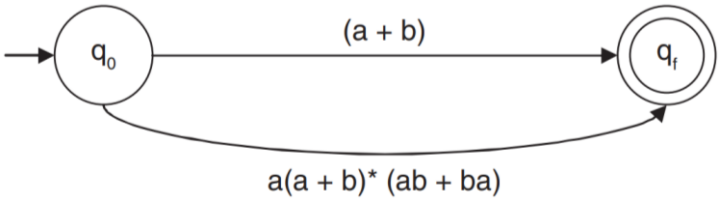
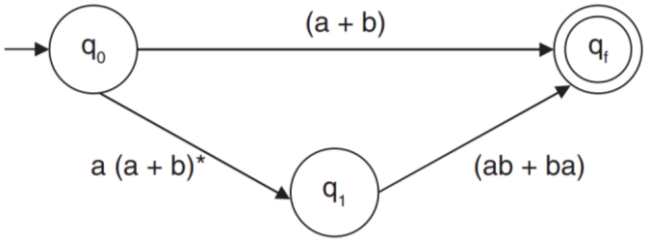
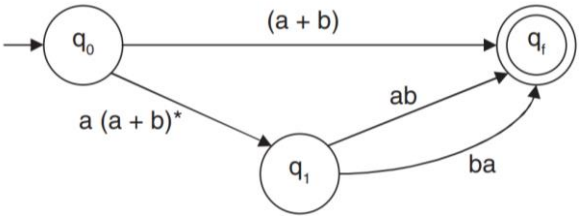


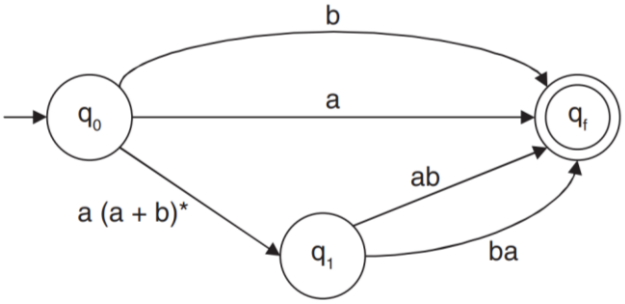
***Step III*:** Between (a+b)* and (ab+ba), there is a .(dot) sign, and so an extra state is added between q_0 and q_f.



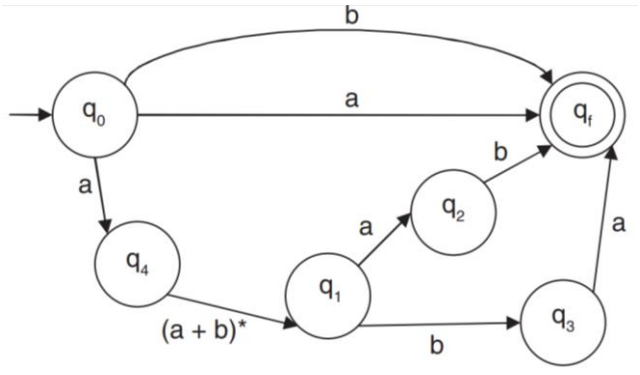
Step IV: Between ab and ba, there is + sign, and so there will be parallel edges between q_1 and q_{f*}



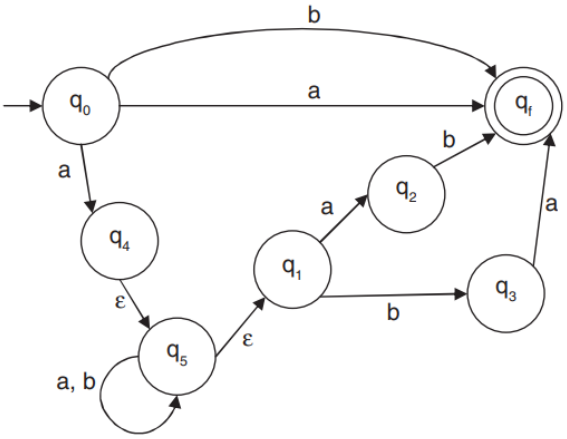
Step V: Between 'a' and b, there is a + sign. So, between q0 and qf there is a parallel edge.



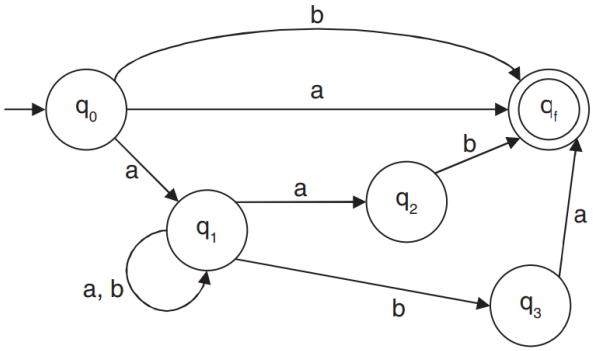
Step VI: Between 'a' and 'b' and between 'b' and 'a', there are .(dots). So, two extra states are added between q_1 and q_f . An extra state is added between q_0 and q_1 for a(a + b)*.



step VII: The * between q_4 and q_1 is removed by adding an extra state with label a, b, and the ∈ transition from q_4 to that state and from that state to q_1.



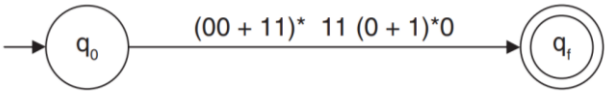
Step VIII: Removing ∈, the automata become



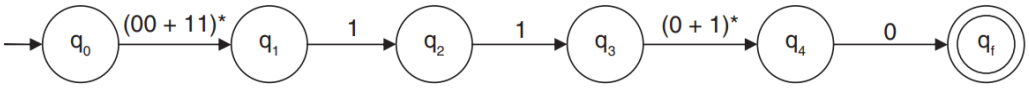
9. construct an FA equivalent to the RE, L = (00+11)*11(0+1)*0.

Solution:

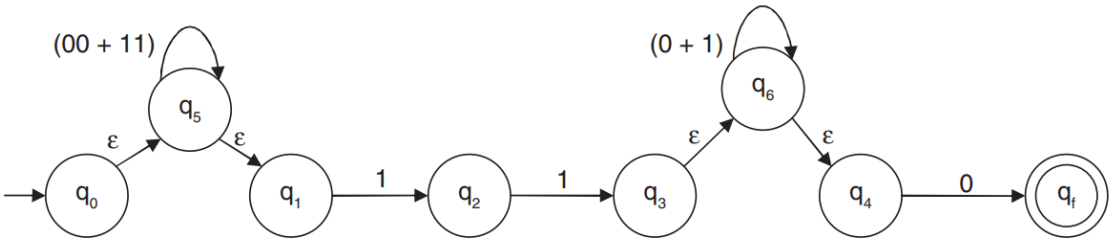
Step I: Take a beginning state q_0 and a final state q_f Between the beginning and fi nal state, place the RE.



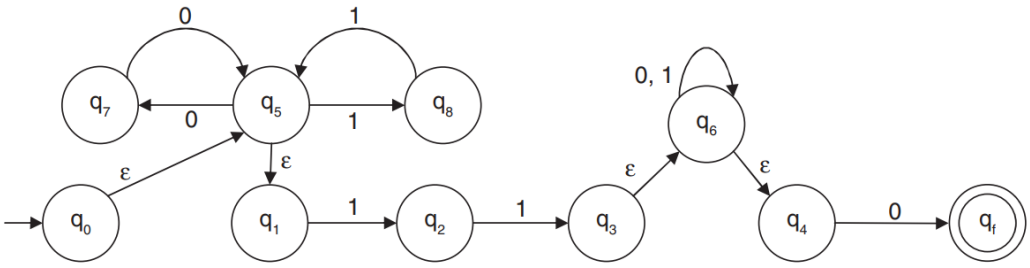
Step II : There are four (dots) in between (00+11)* and I , I and I , I and (0+1)* , and (0+1)* and 0. So , the four extra states are added in between q_0 and q_f*



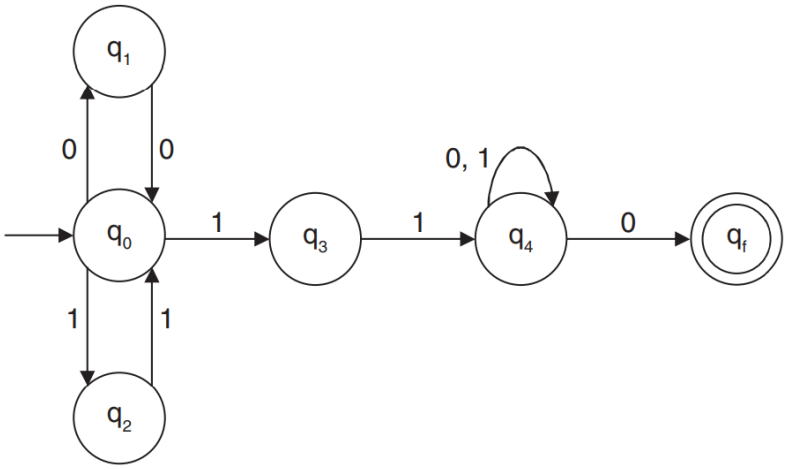
Step III: The * between q_0 and q_1 is removed by adding an extra state with label 00 and 11 as Loop and ∈ transition from q0 to that state and from that state to q1 The same is applied for the removal of * between q3 and q4.



Step IV Removing the + sign between 00 and 11, parallel edges are added and for two .(dots) signs (between 0, 0 and 1,1), two extra states are added.

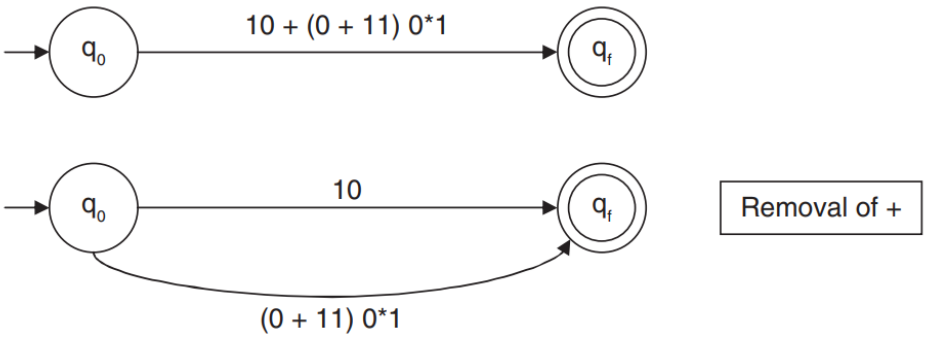


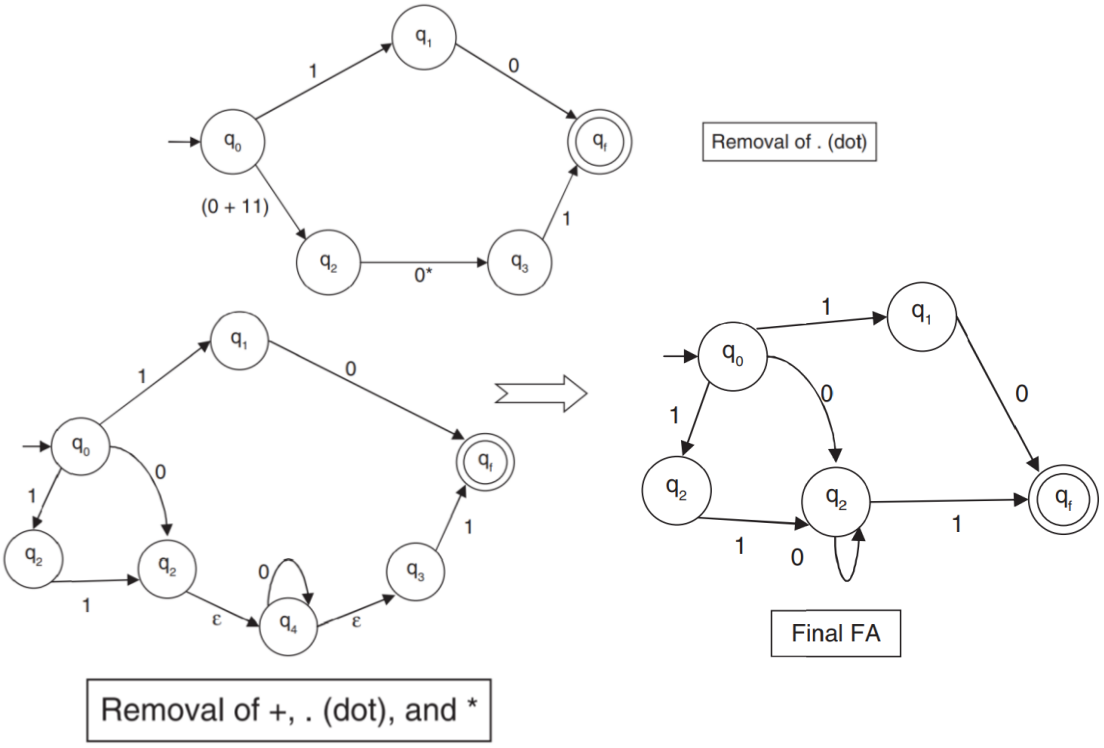
Step V: Use the ∈ removal technique to find the corresponding DFA.



10. Construct an FA for the RE 10+(0+11)0*1.

Solution:





11. Convert an RE (0+1)*(10)+(00)*(11)* to an NFA with ∈ move.

[Gujrat Technological University 2010]