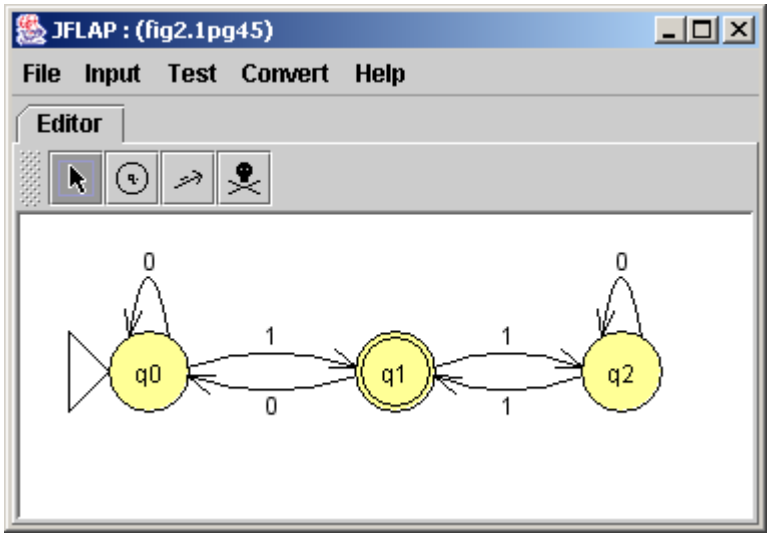
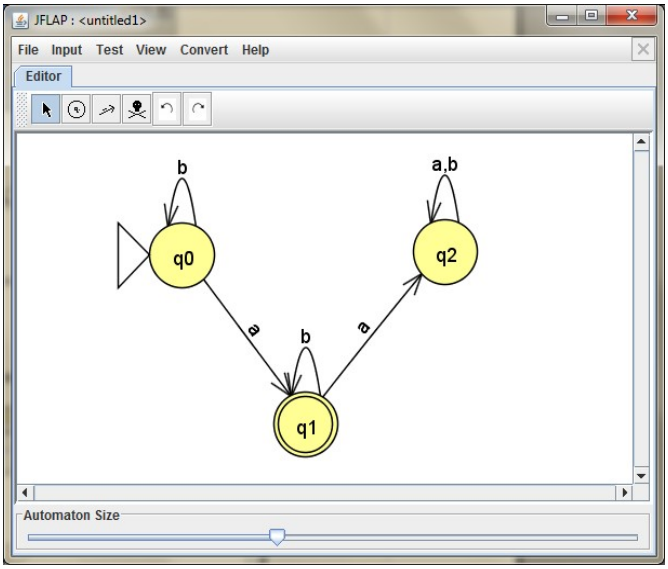
CS340
Homework Assignment 1 using JFLAP

1. which strings (0001, 01001, 0000110) are accepted by the dfa in figure 2.1

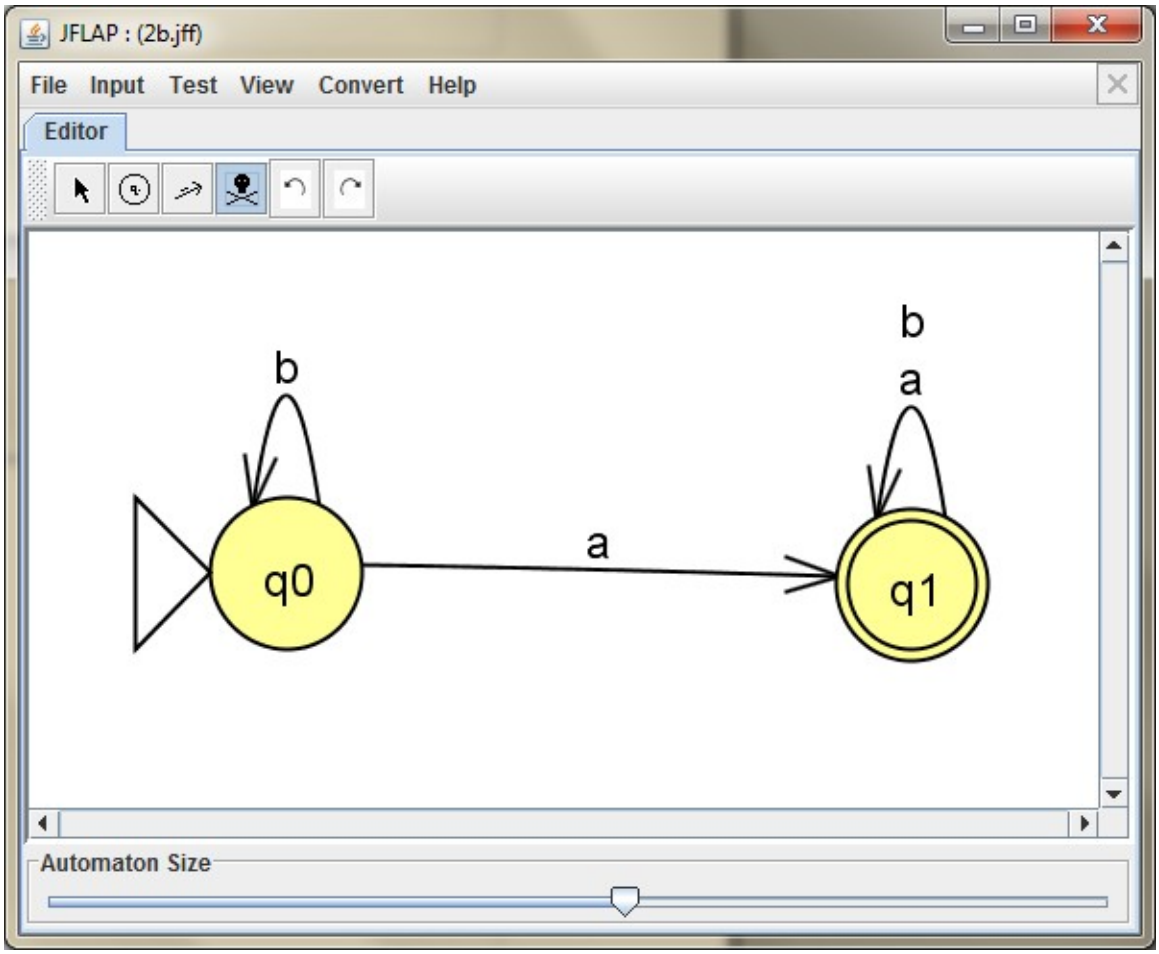
0001 = Accept
01001 = Accept
0000110 = Reject



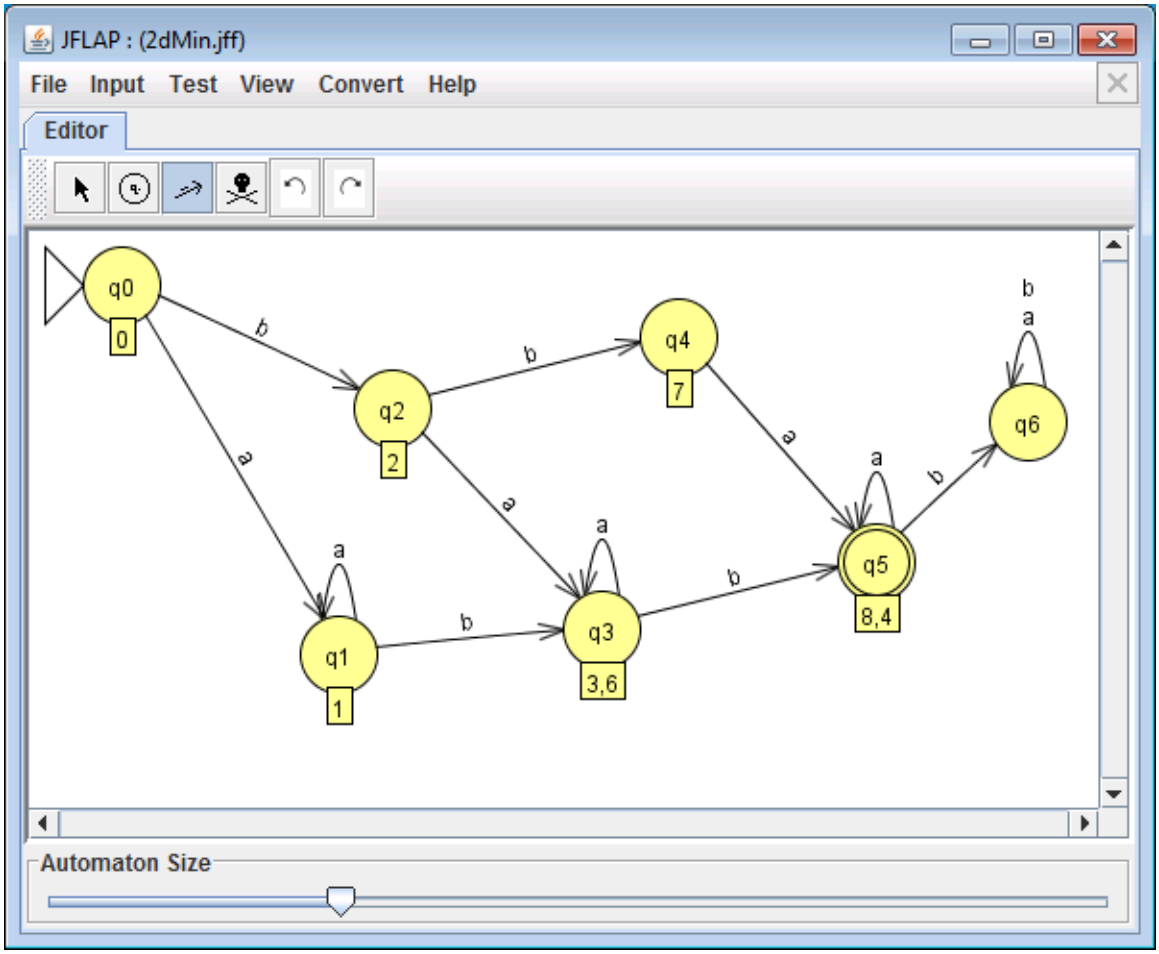
2(a) L = { all strings with exactly one a}



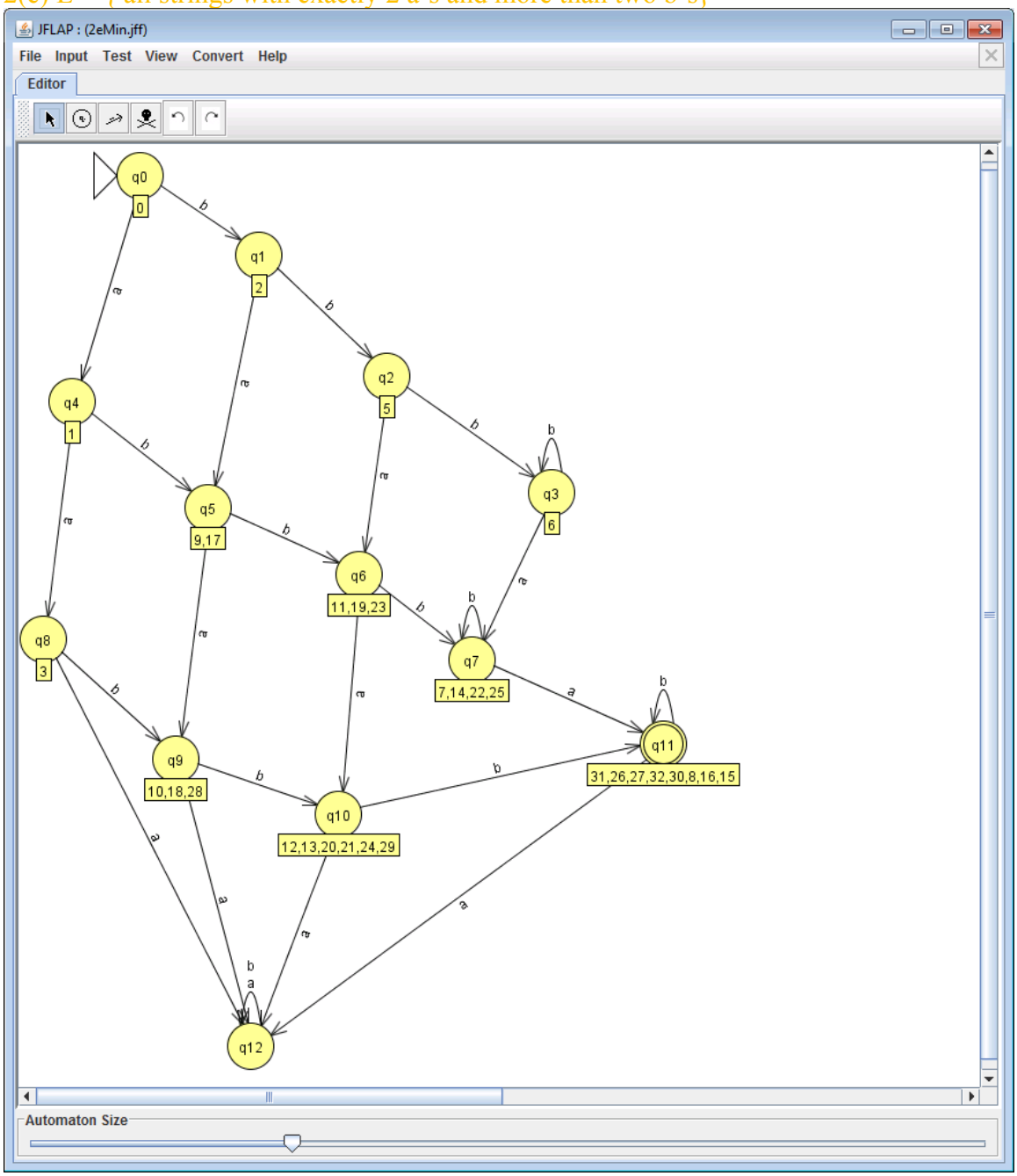
2(b) L = { all strings with at least one a}



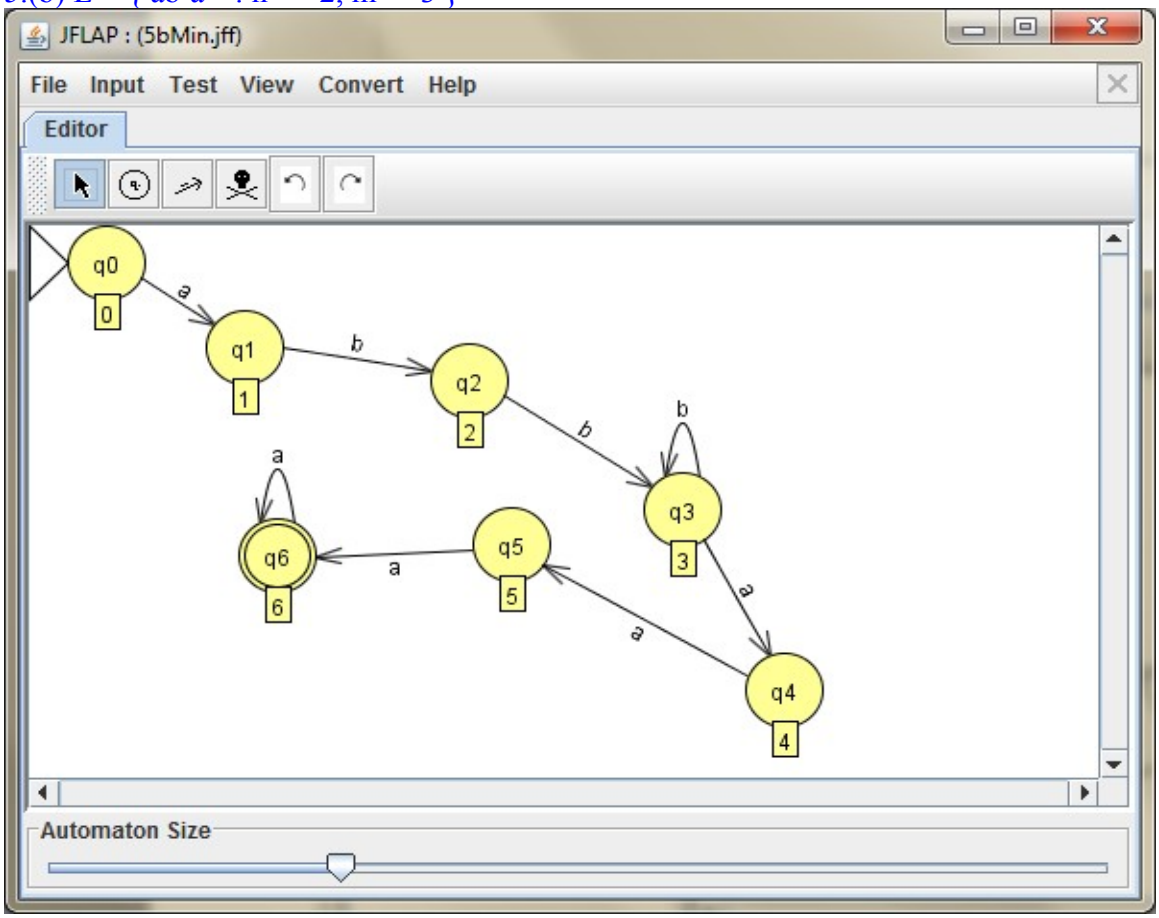
2(d) L = { all strings with at least one a and exactly two b's}



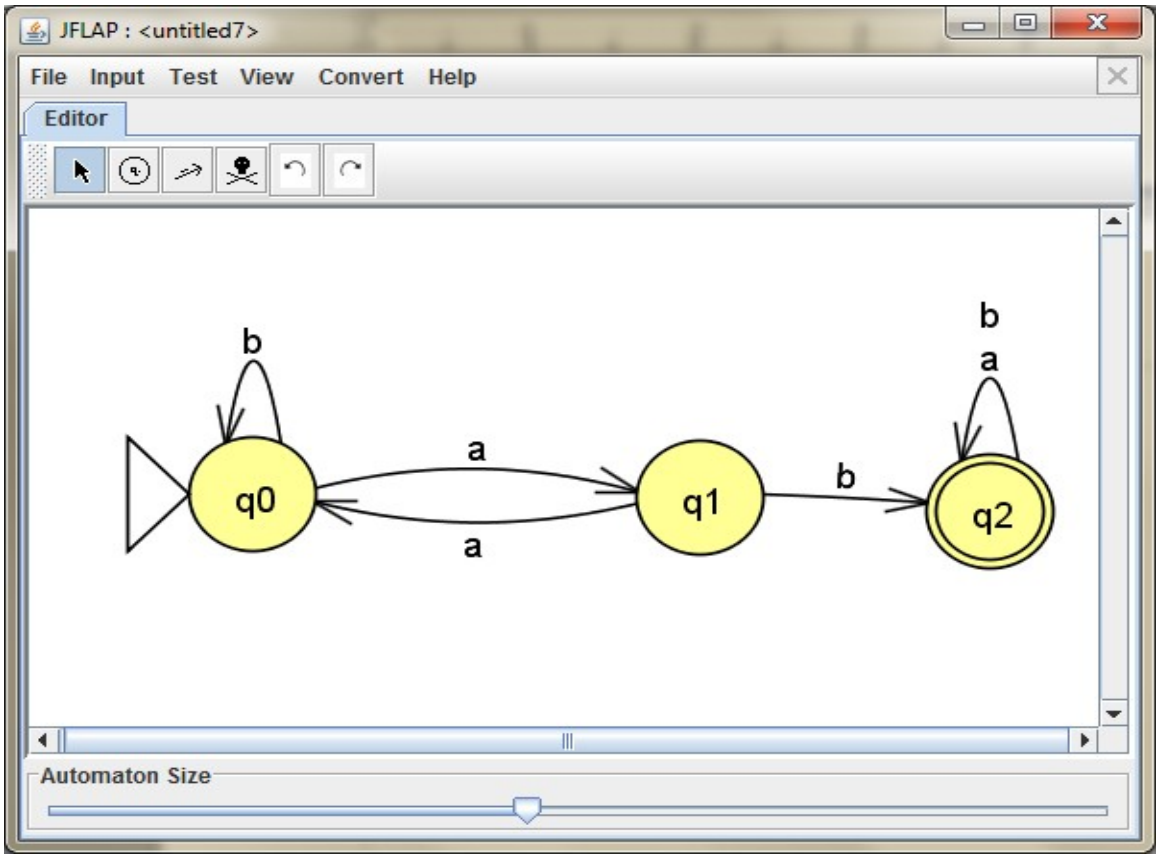
2(e) L = { all strings with exactly 2 a's and more than two b's}



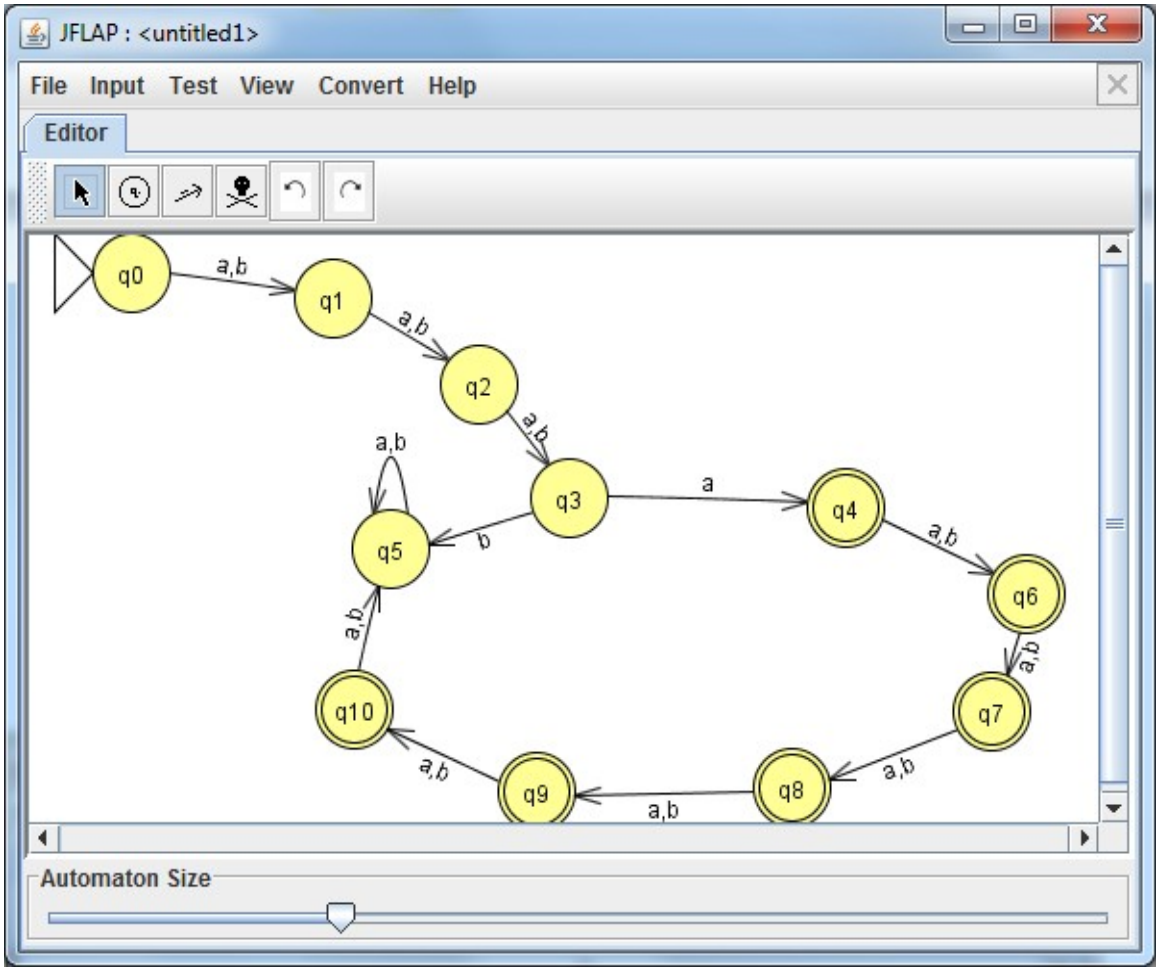
5.(b) L = { $ab^n a^m$: n >= 2, m >=3 }



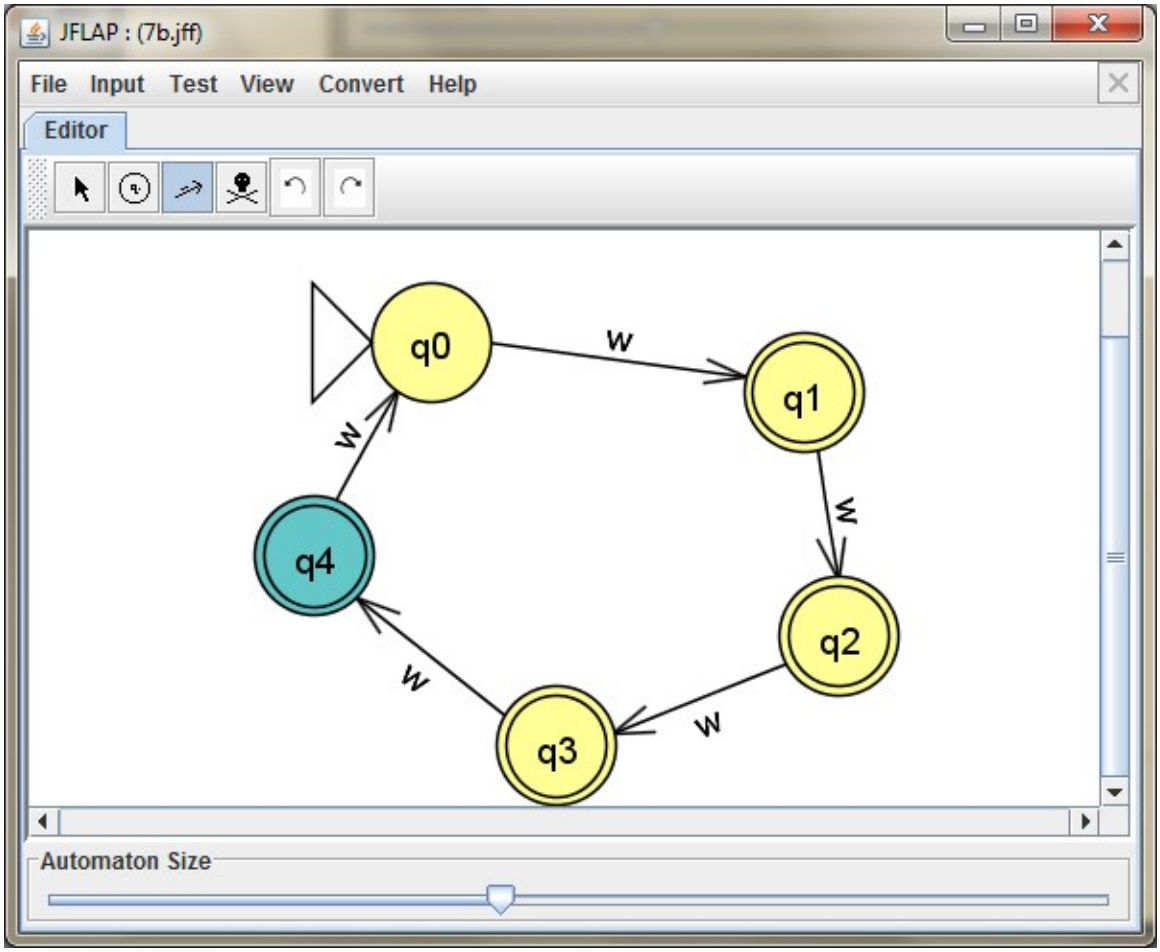
5.c) L = { w1 ab w2 : w1 ∈ {a,b}*, w2 ∈ {a,b}* }



6. With ∑ = {a,b}, give a dfa for L = {w1 a w2 : |w1| =3, |w2| <=5 }



7. (b) L = { w : |w| mod 5 != 0}


JFLAP : (7b.jff)
File Input Test View Convert Help
Editor
q0
q1
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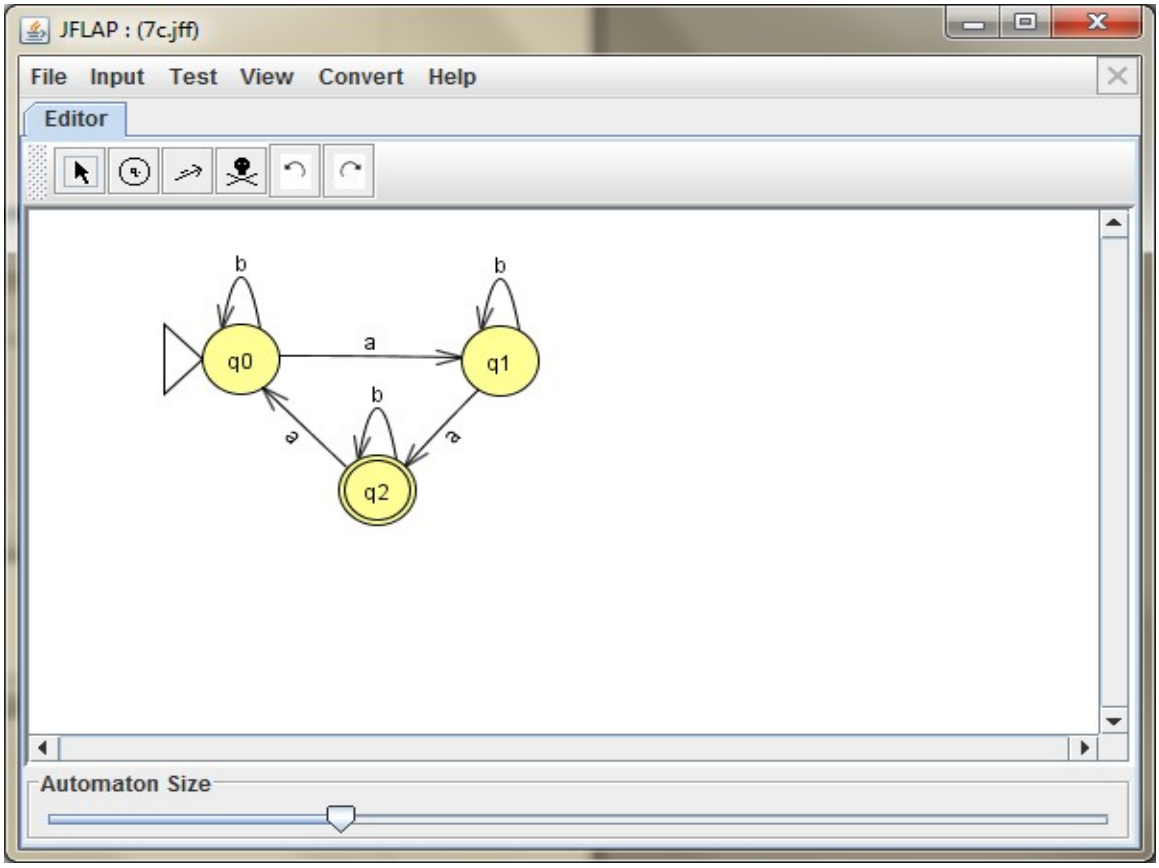
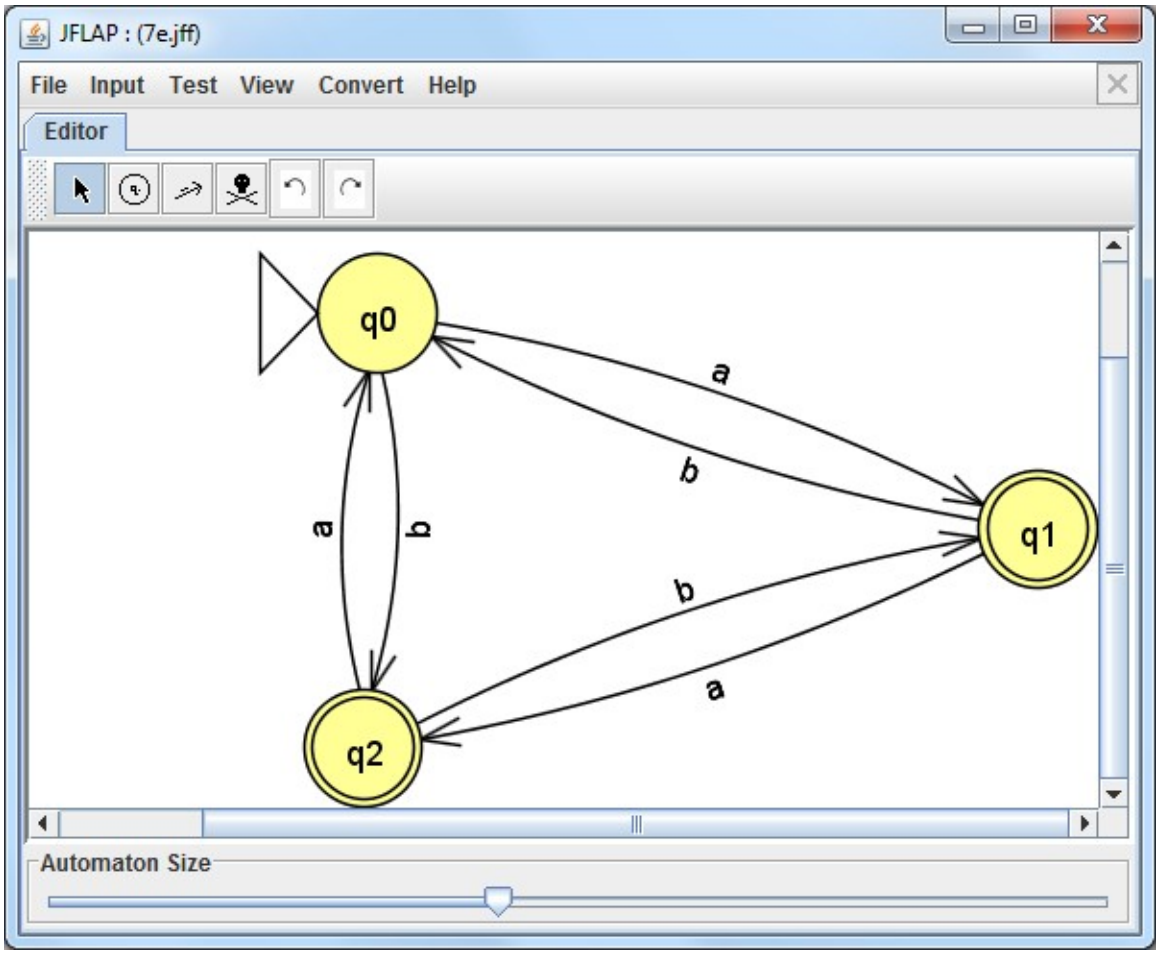
w
Automaton Size

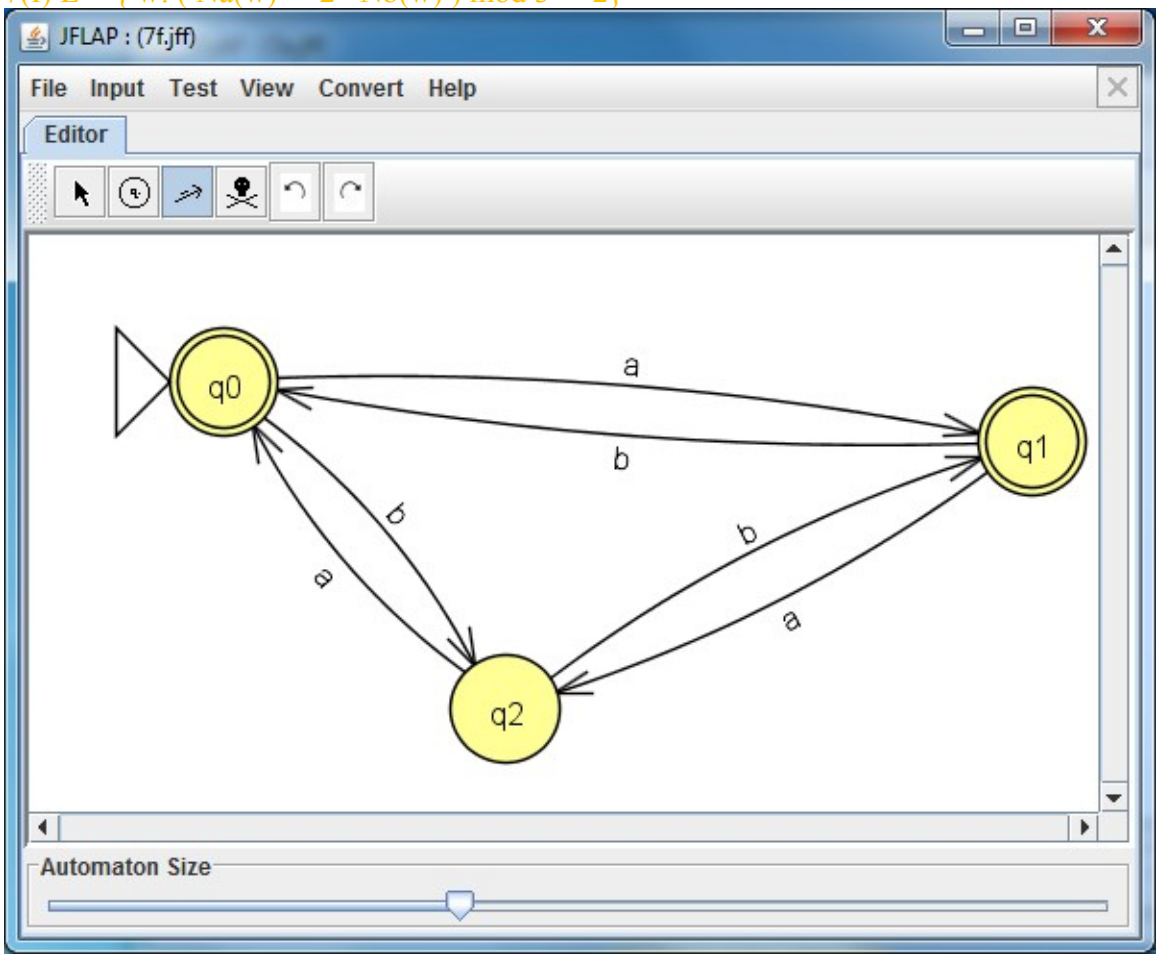
7.c) L = { w : Na(w) mod 3 > 1}



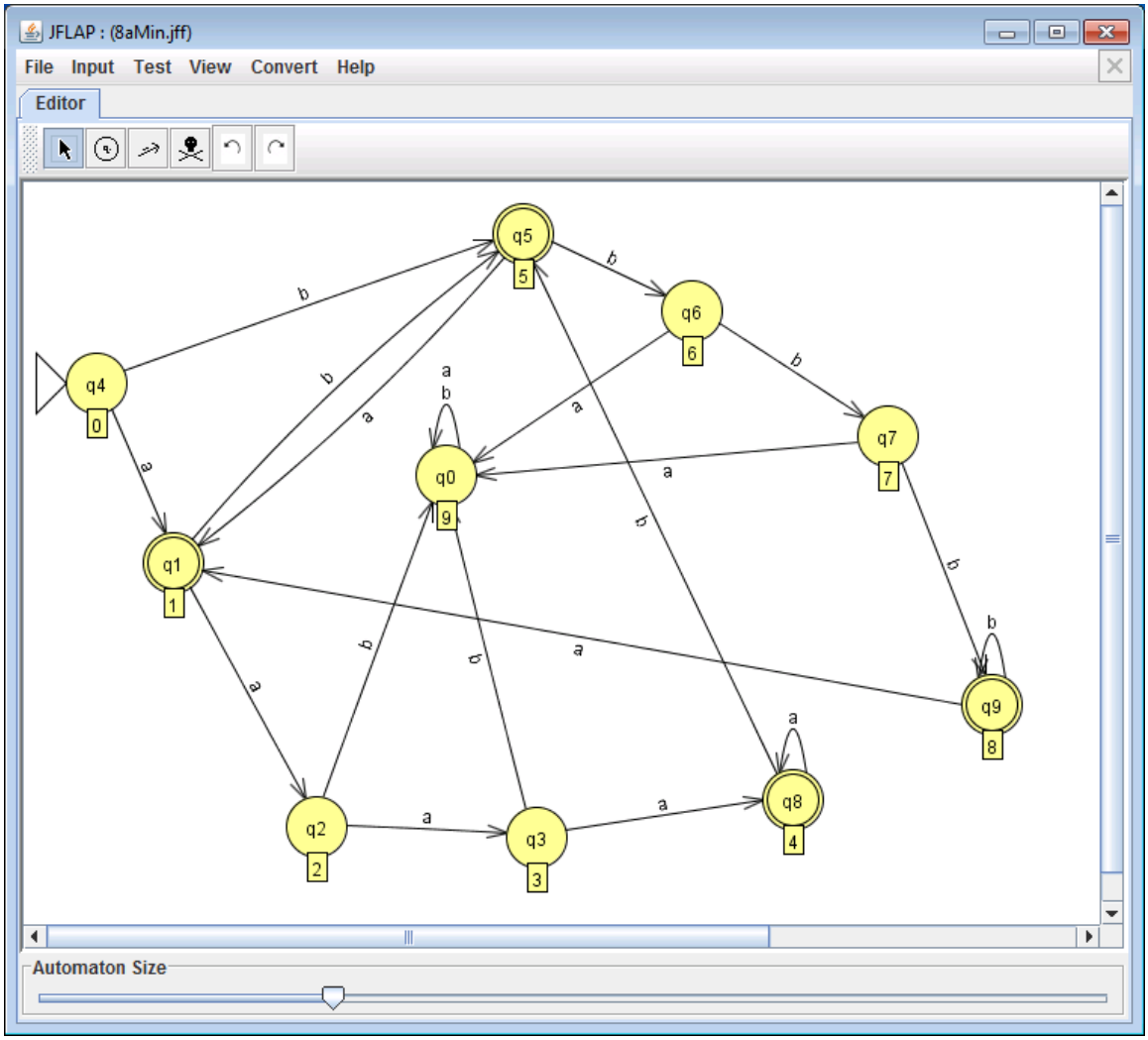
7(e) L = { w: (Na(w) – Nb(w)) mod 3 > 0}



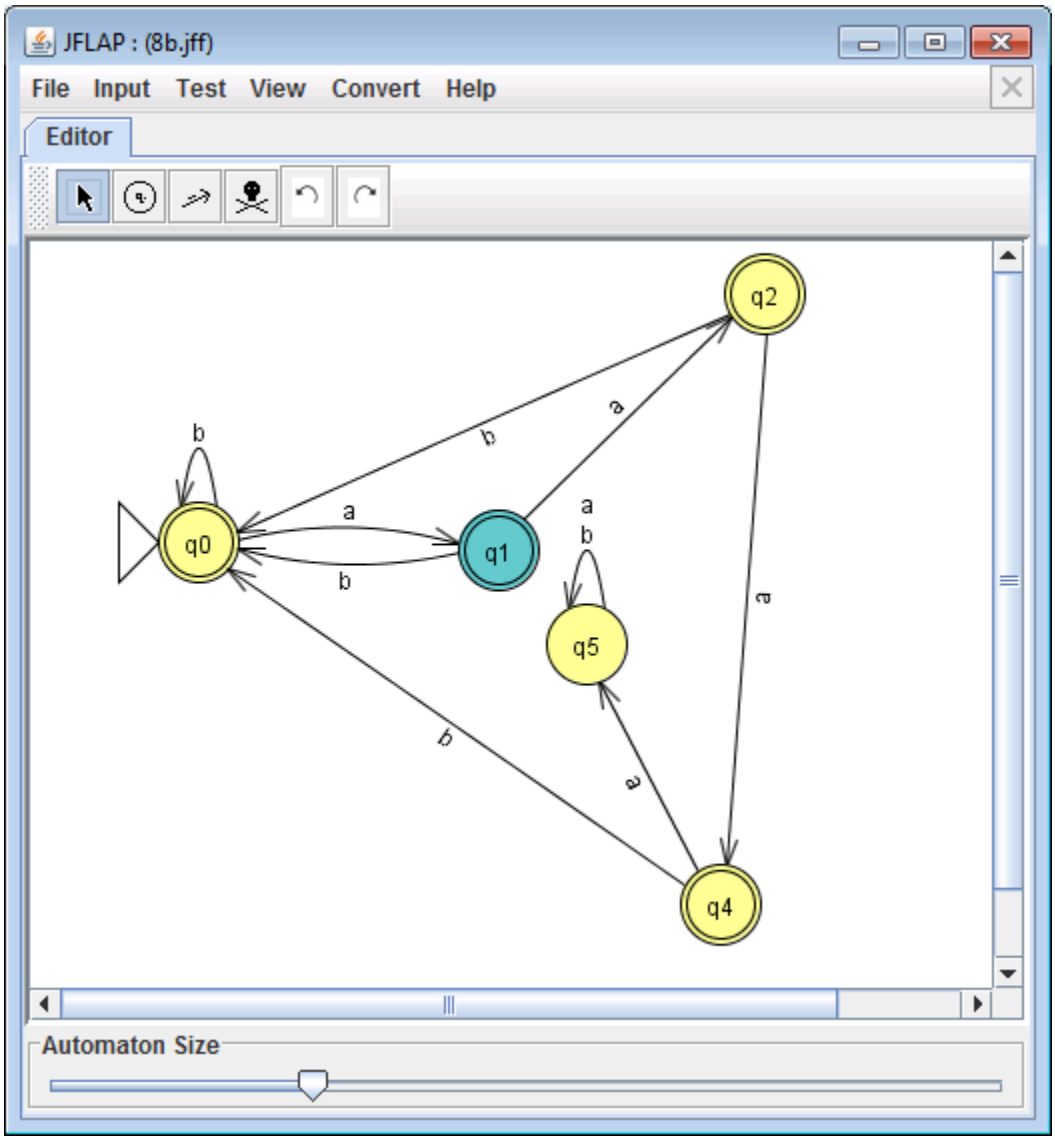
7(f) L = { w: (Na(w) + 2* Nb(w)) mod 3 < 2}



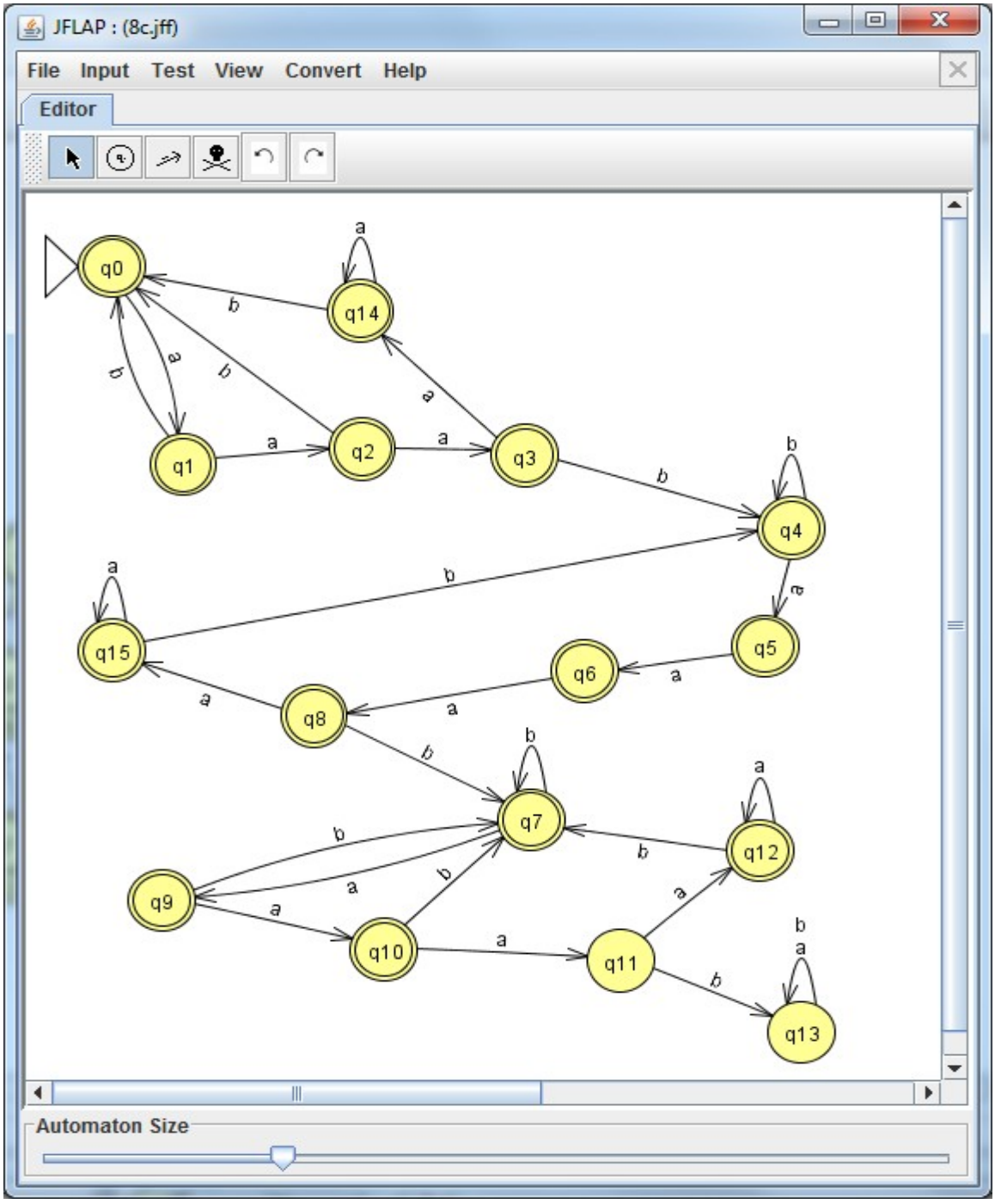
8.(a) L = {w : w contains no runs of length less than four}



8(b) L = {w : w every run of a's has length either 2 or 3}



8.c) L = {w : there are at most two runs of a's of length 3}


JFLAP : (8c.jff)
File Input Test View Convert Help
Editor
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q1
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q3
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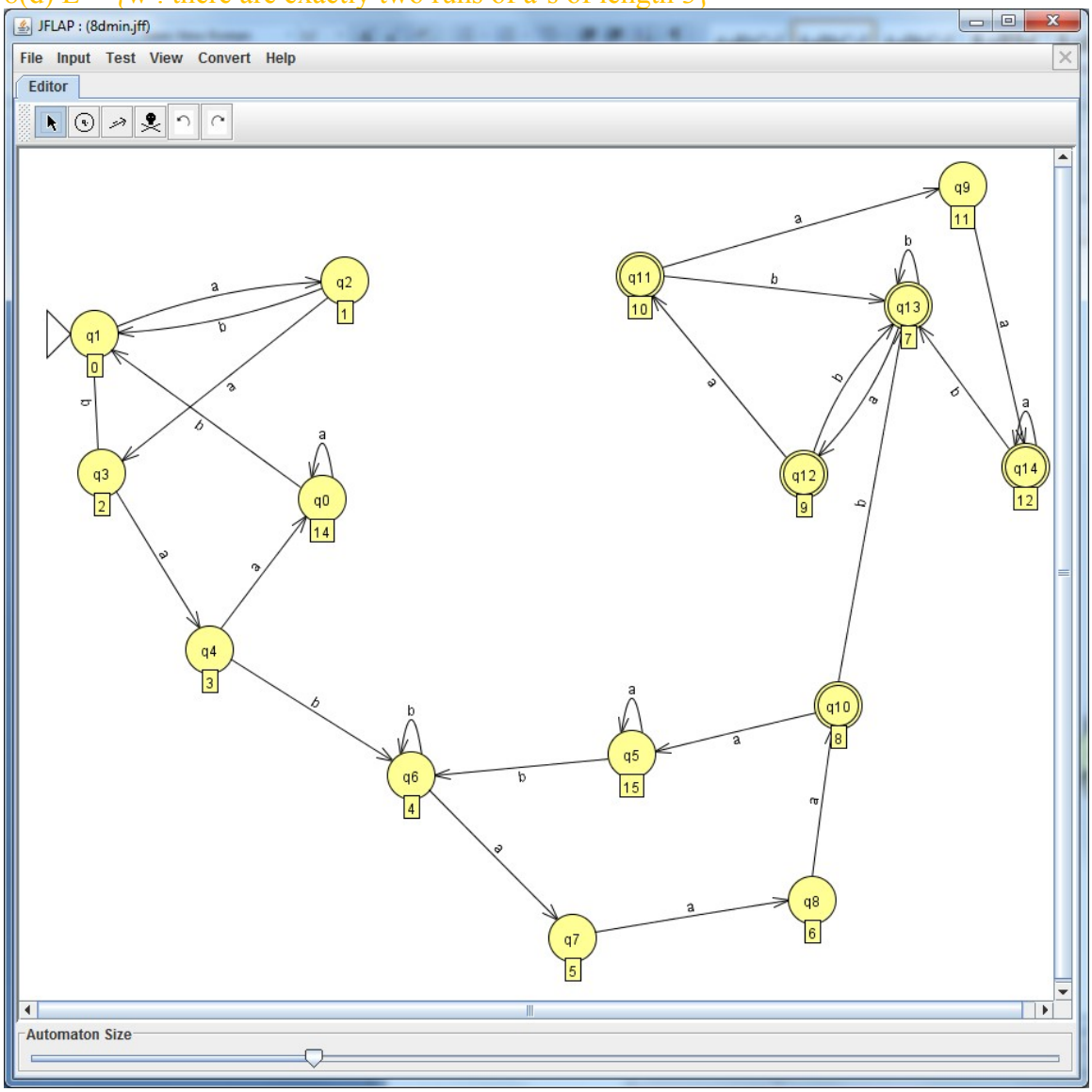
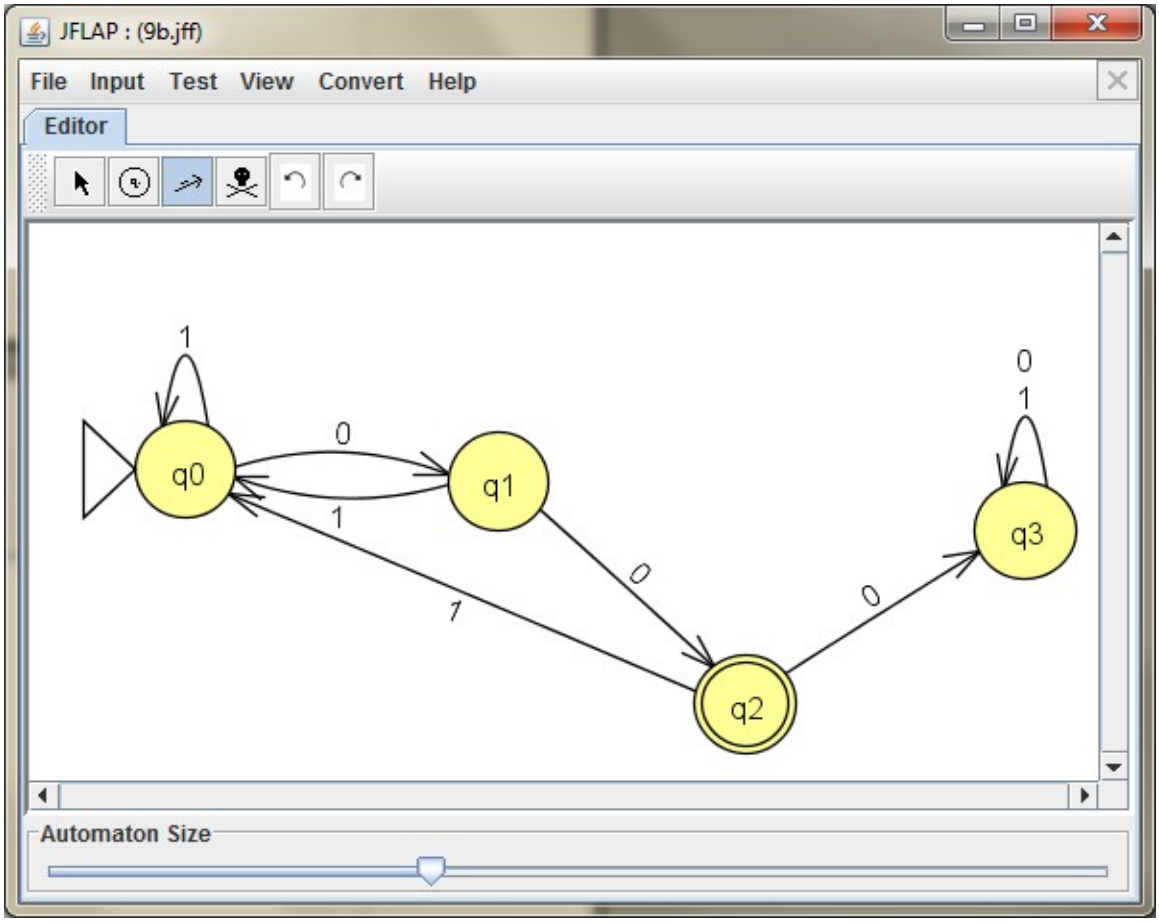
Automaton Size

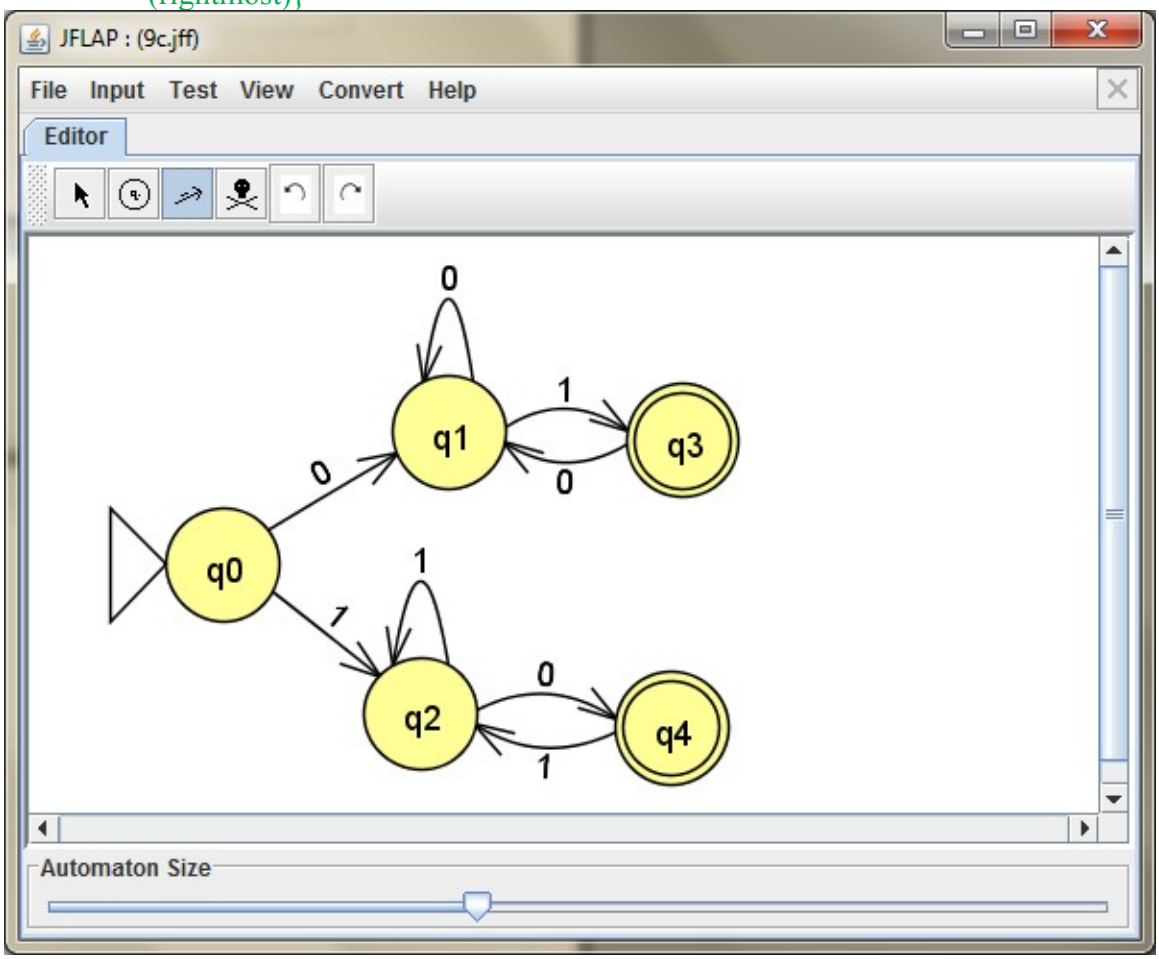
8(d) L = {w : there are exactly two runs of a's of length 3}



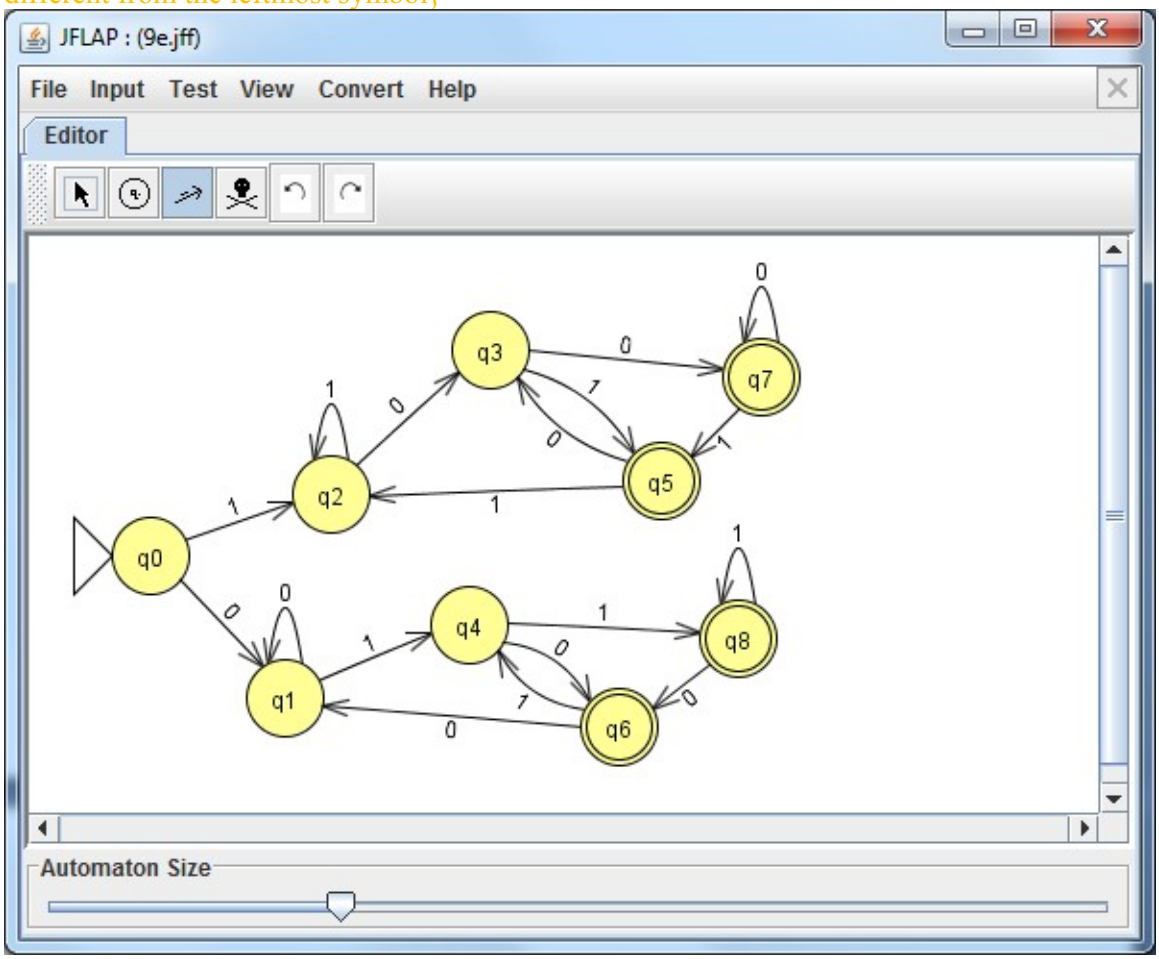
9.(b) L = { all strings containing 00 but not 000}



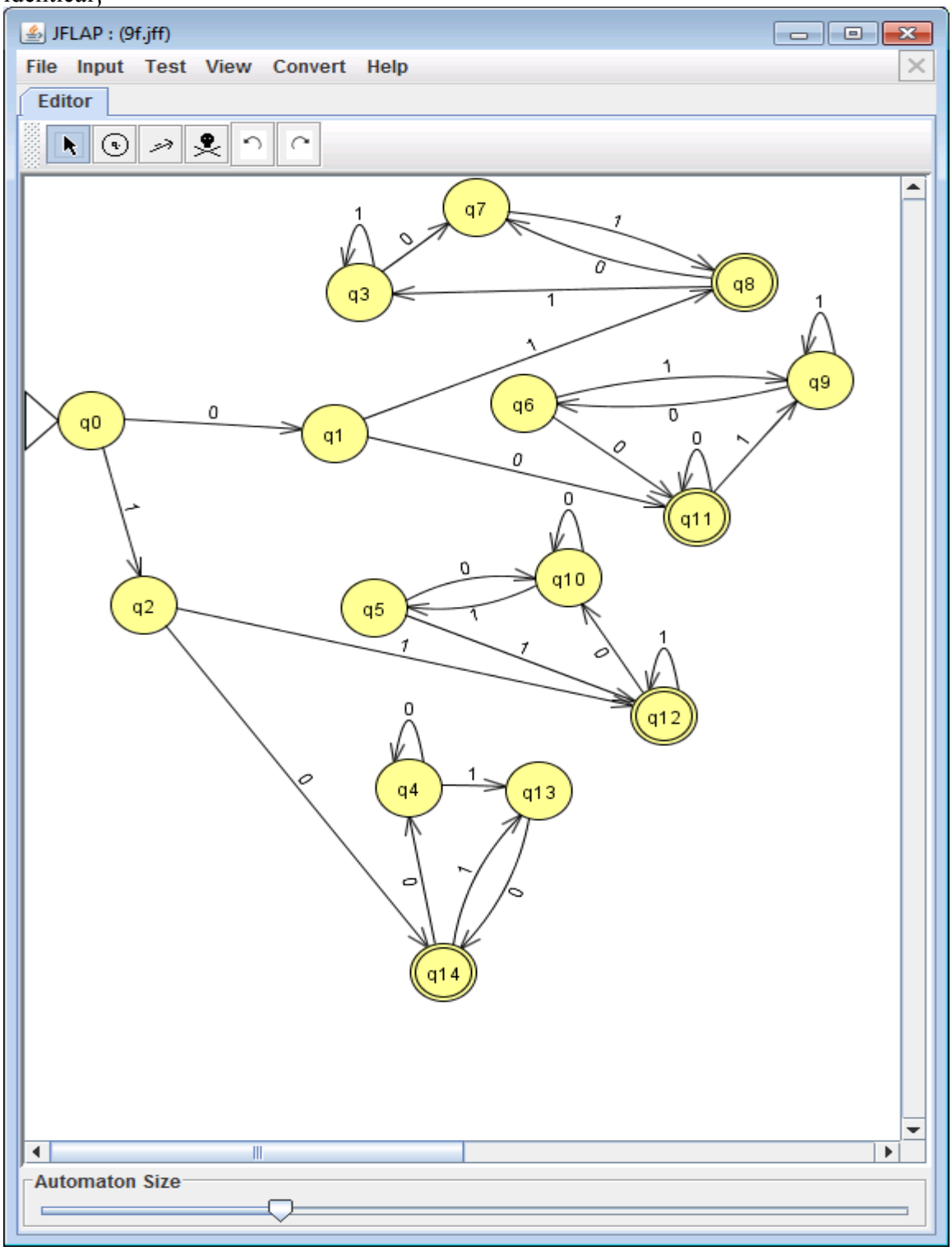
9.c) L = { all strings in which the first (leftmost) symbol differs from the last (rightmost)}



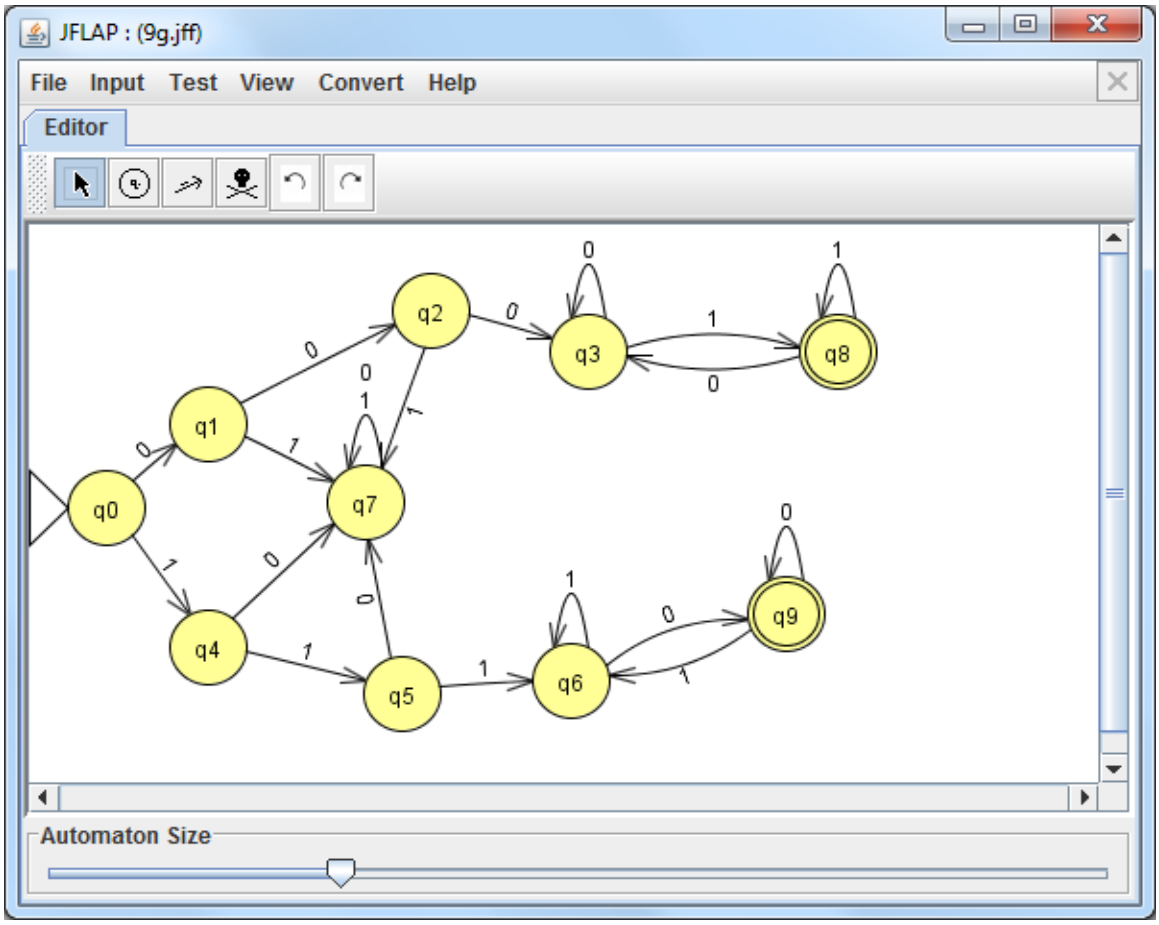
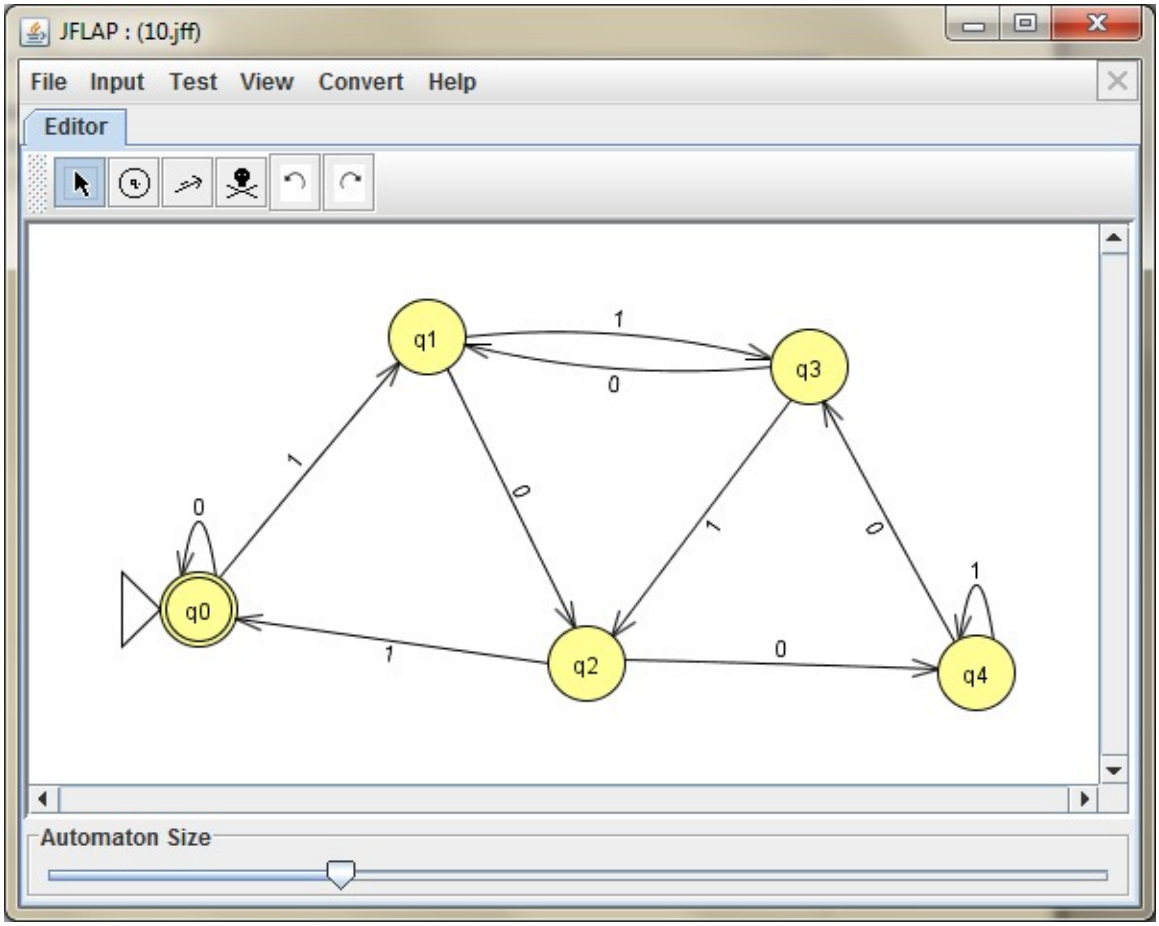
9(e) L = { all strings of length 3 or more in which the second symbol from the right is different from the leftmost symbol}



9(f) L = { all strings which the leftmost two symbols and the rightmost two symbols are identical}



9(G) L = { all strings of length four or greater in which the leftmost three symbols are the same but different from the rightmost symbol}



10. Construct a DFA that accepts strings on {0,1} if and only if the value of the string interpreted as a binary representation of an integer is zero modulo five. For example, 0101 and 1111 (5 and 15) are accepted.