Lab Assignment -1

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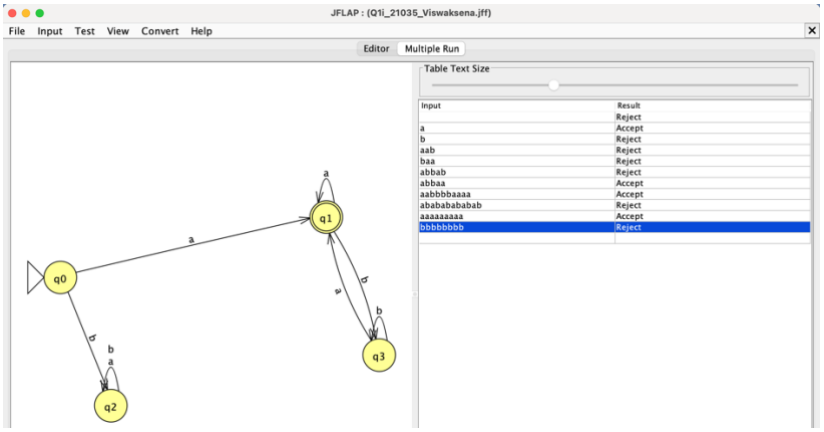
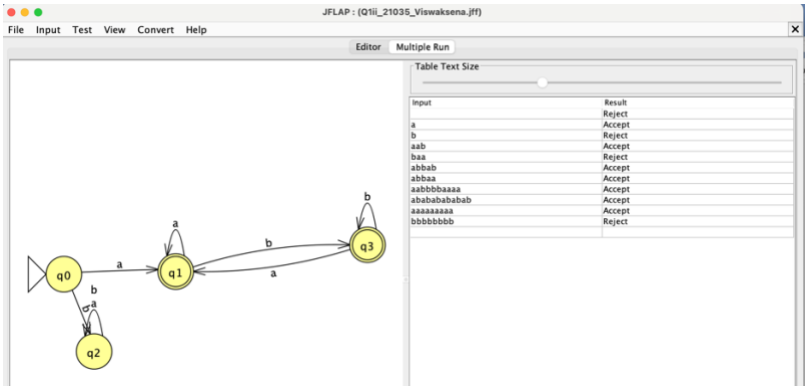
Design DFA for the following languages.

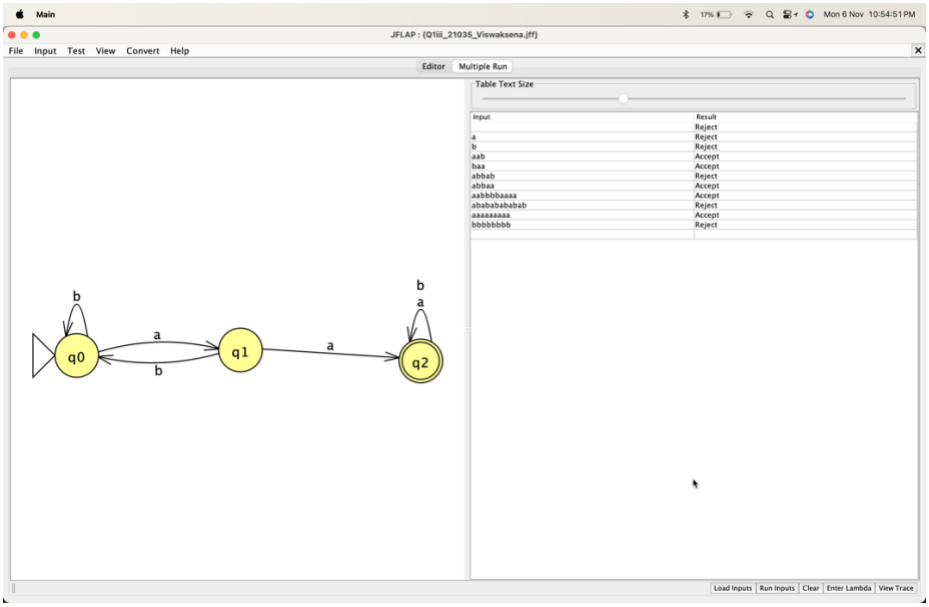
1. DFA for strings over the alphabet {a, b}
   i. starting with a and ending with a.



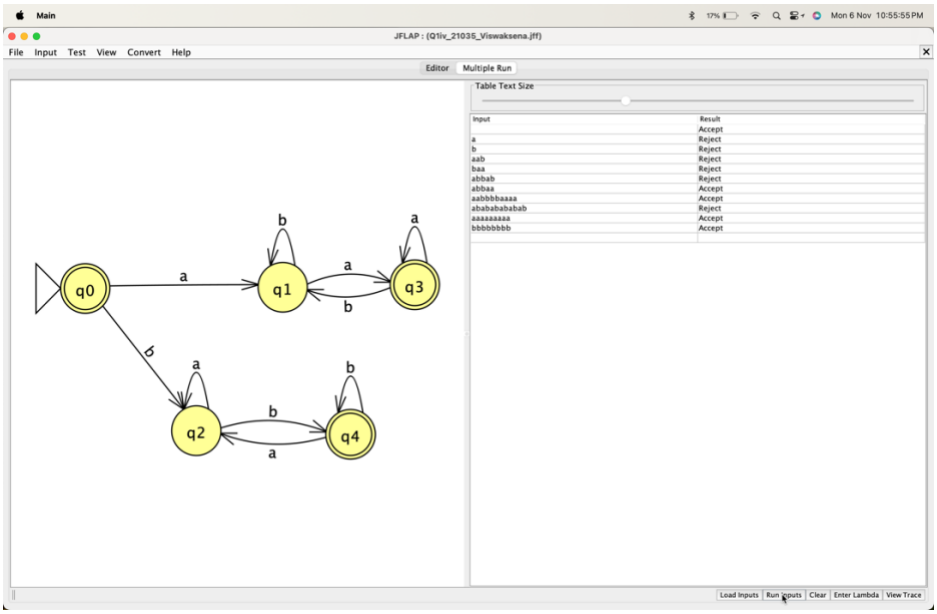
   ii. starting with a.



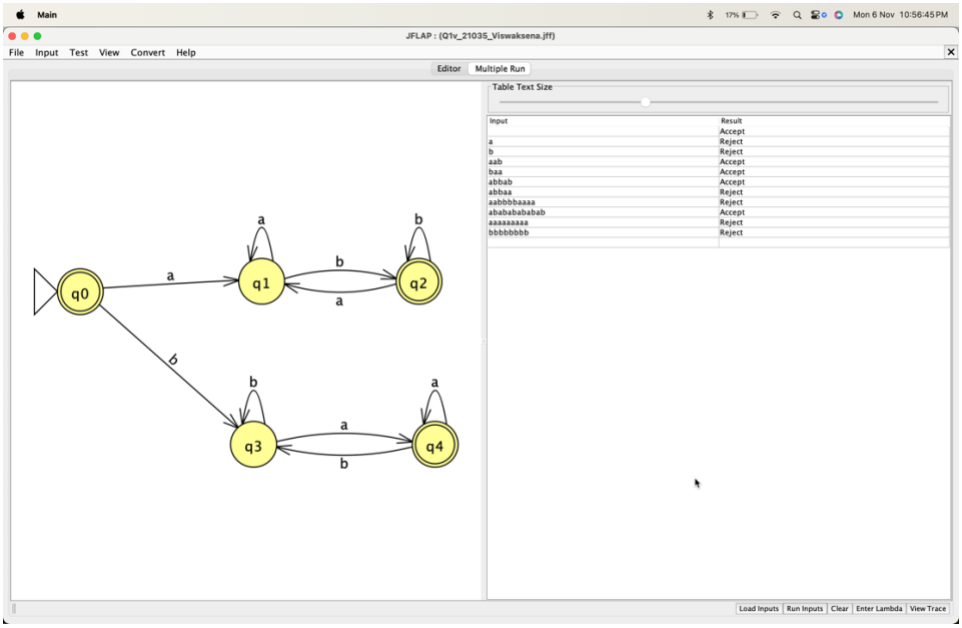
   iii. containing aa as a substring.



iv. starting and ending with the same letters.

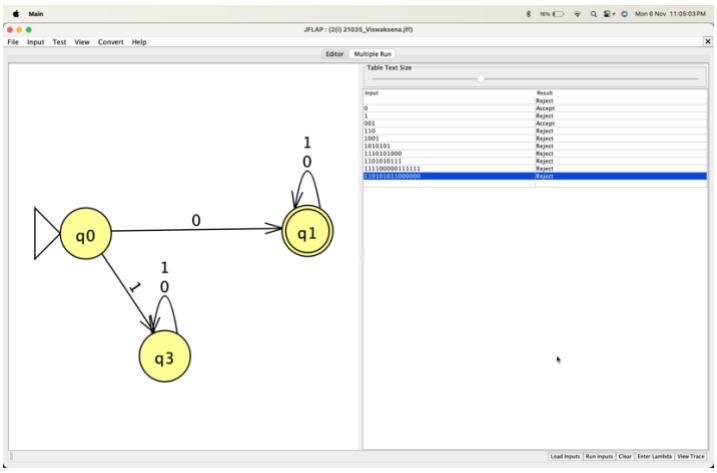


v. starting and ending with different letters.

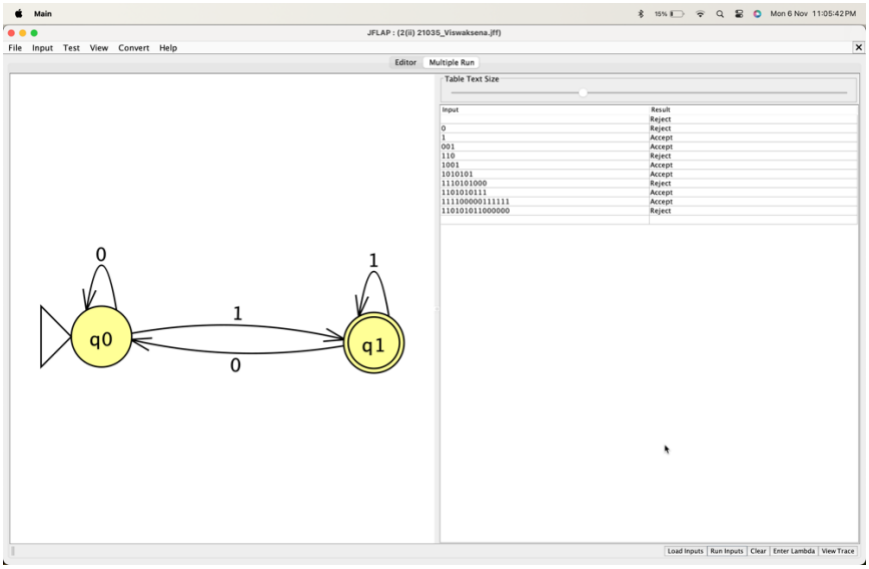


2. DFA for strings over the alphabet {0, 1}

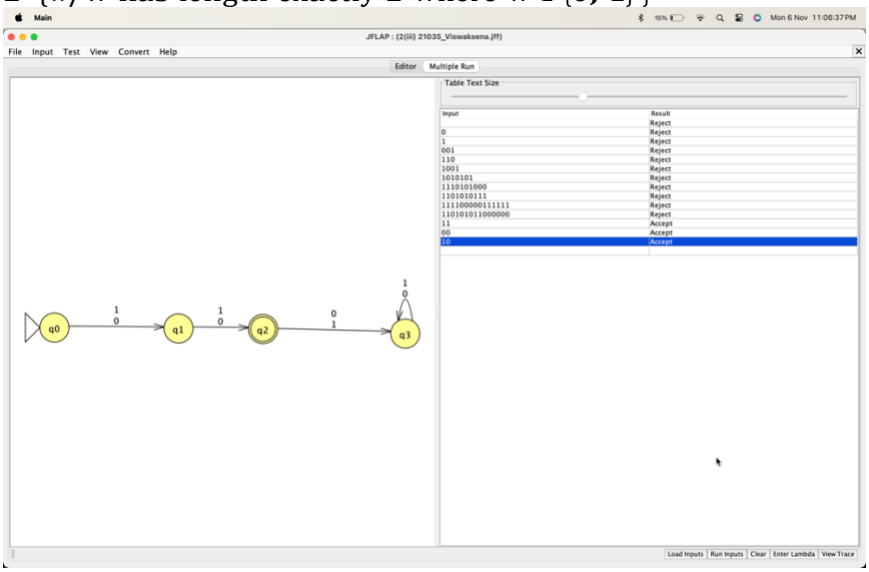
i. L={w/w starts with a 0 where w ∈ {0, 1}*}



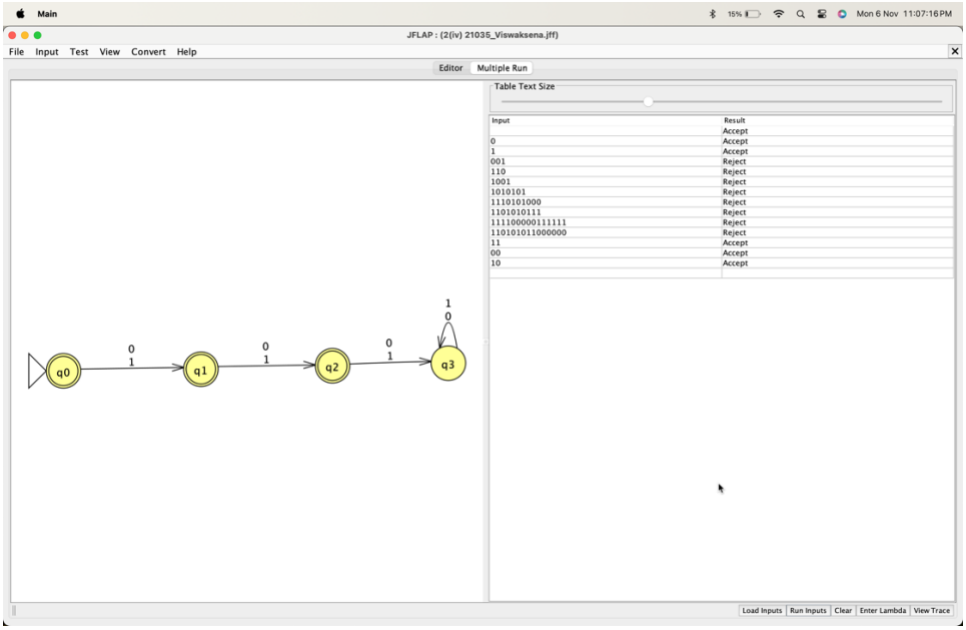
ii. L={w/w ends with a 1 where w ∈ {0, 1}*}



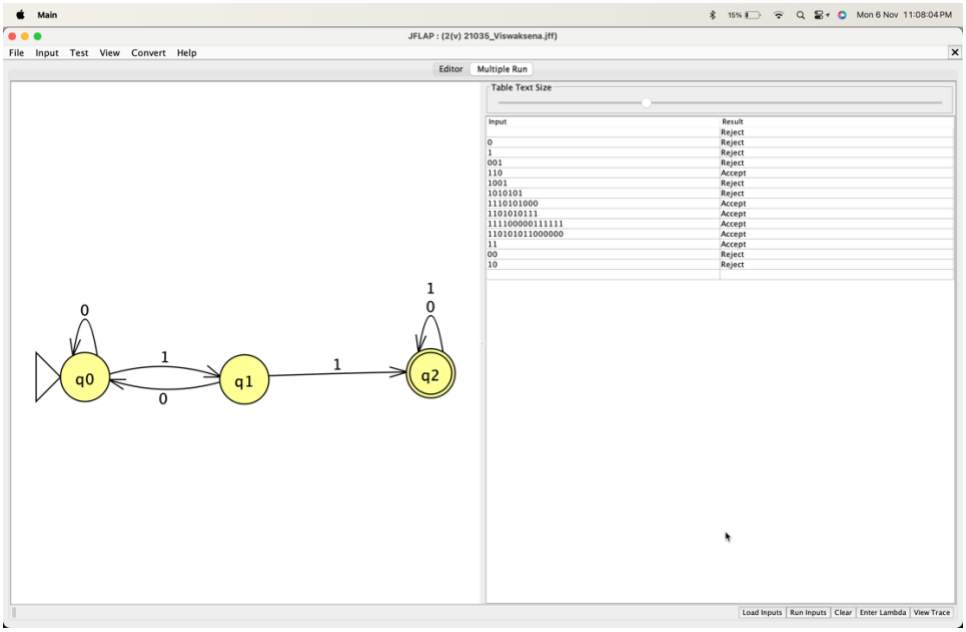
iii. L={w/w has length exactly 2 where w ∈ {0, 1}*}



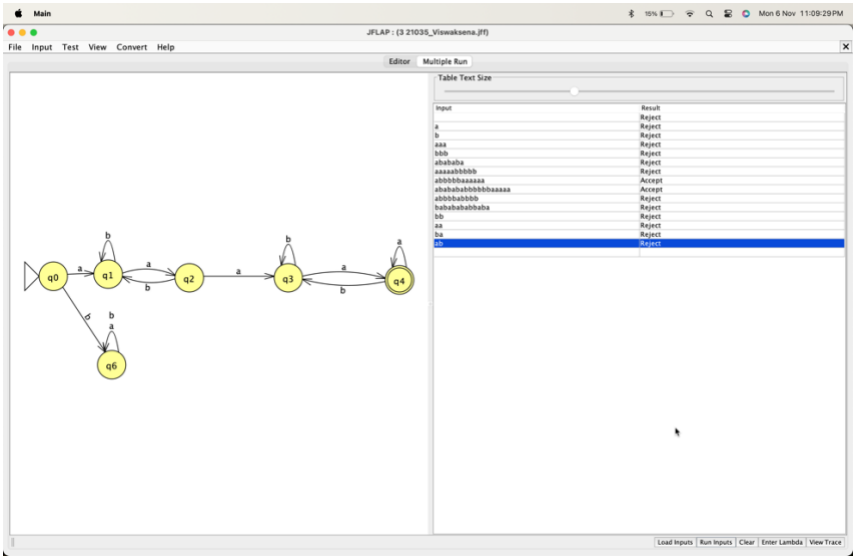
iv. L={w/w has length at most 2 where w ∈ {0, 1}*}



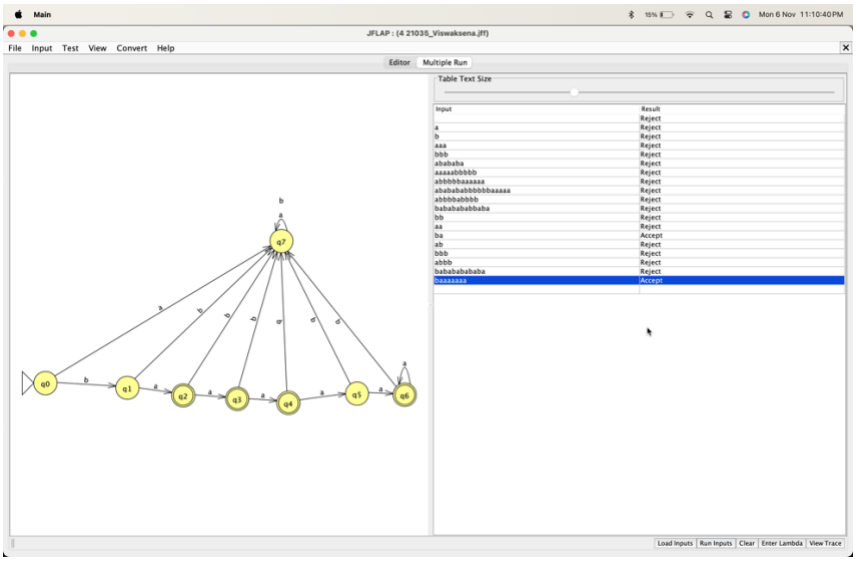
v. L={w/w contains the substring 11 where w ∈ {0, 1}*}



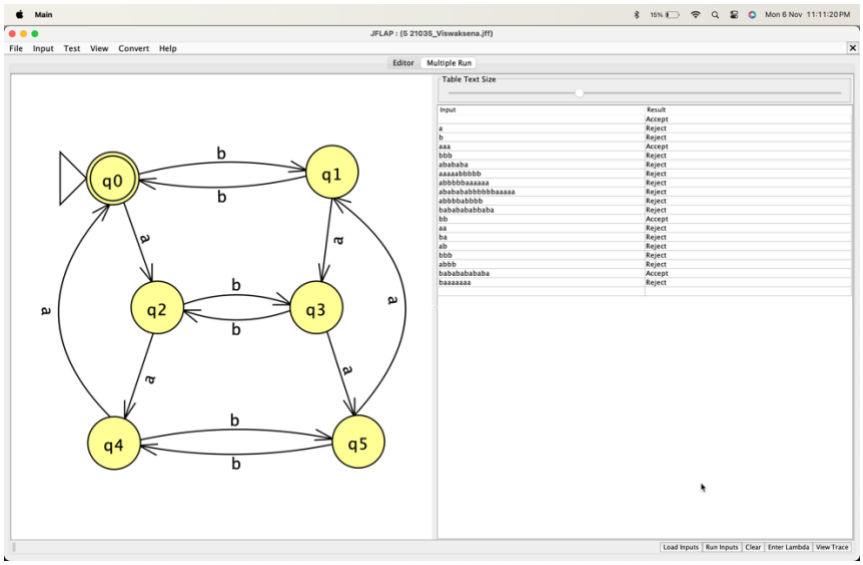
3. L={aw$_1$aaw$_2$a : w$_1$, w$_2$ ∈ {a, b}*}



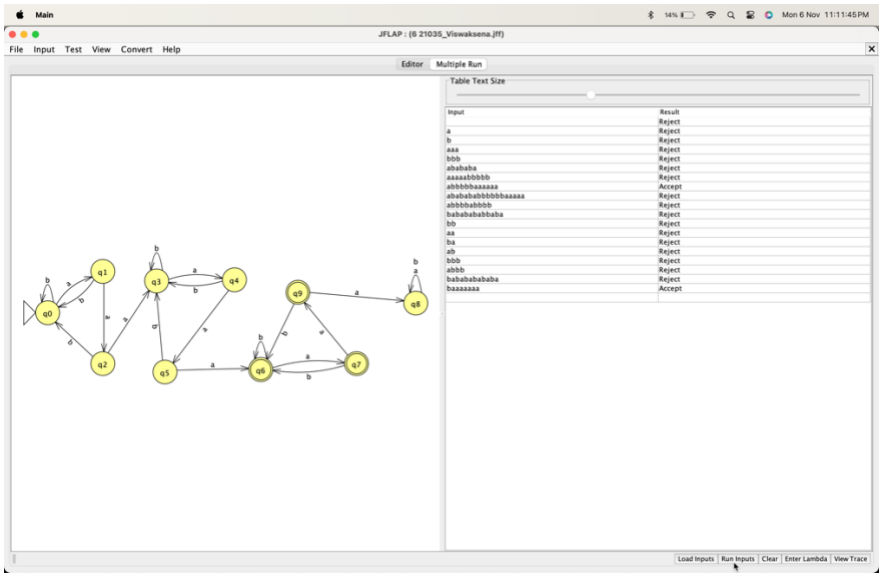
4. L={ba^n : n ≥ 1, n ≠ 4}



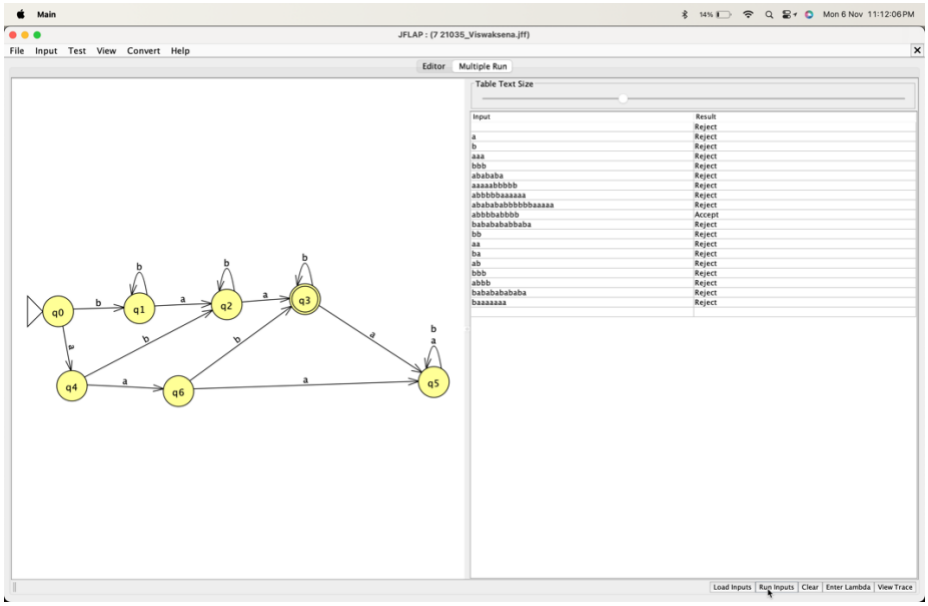
5. L={w | $n_a(w)$ mod 3 = 0 and $n_b(w)$ mod 2 = 0}



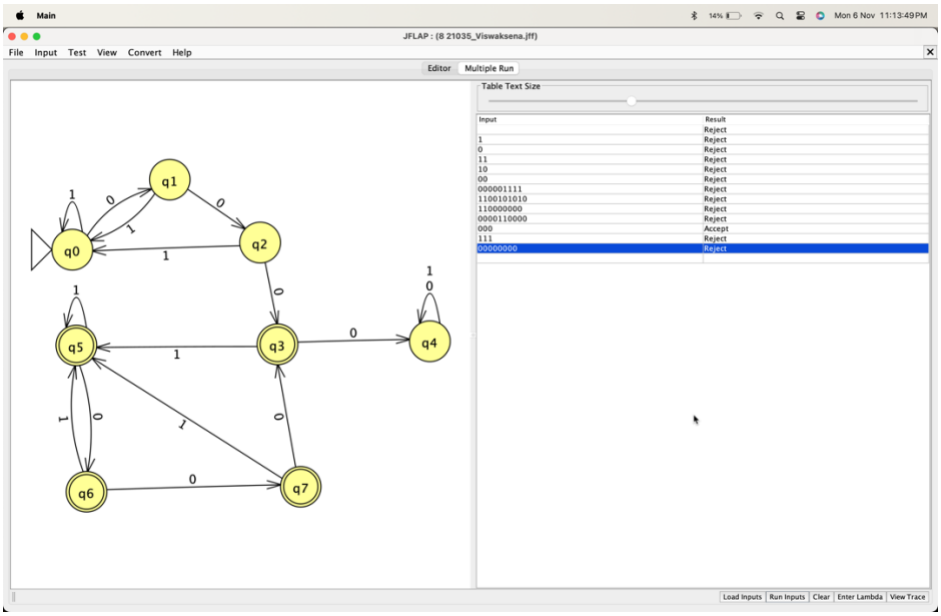
6. L={w : there are exactly two runs of *a*'s of length 3} on {a, b}}



7. All strings with at least one b and exactly two a's on {a, b}



8. All strings that contain substring 000, but not 0000 on {0,1}.



9. Construct deterministic finite automata (DFA) for the language L = { w : w has odd number of 0's and w has odd number of 1's},over the alphabet Σ = {0, 1}.