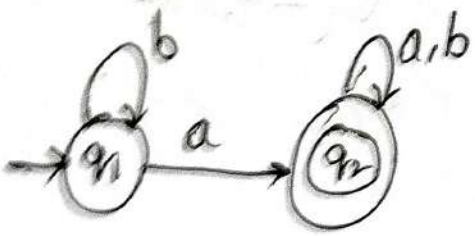
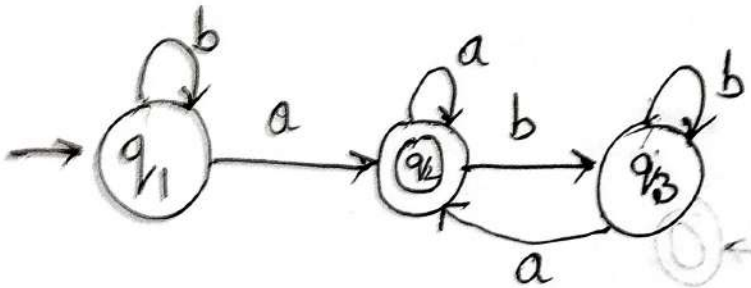
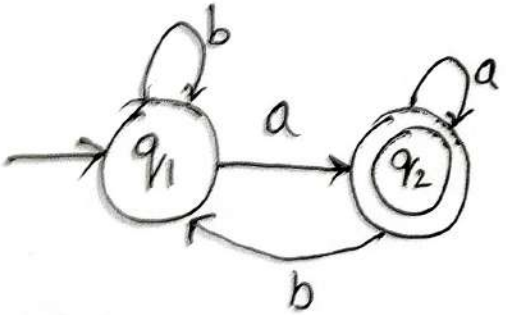
DFA

(i) $L = \{ w \mid w$ contains atleast one 'a' $\}$



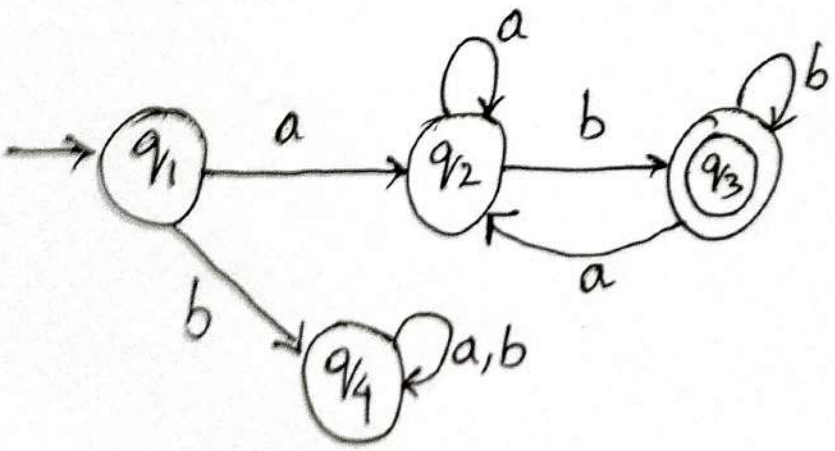
(ii) $L = \{ w \mid w$ ends with 'a' $\}$





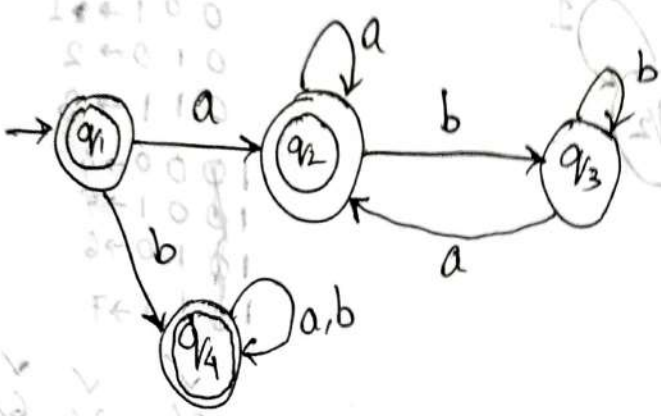
[more accurate answer]

(iii) $L = \{ w \mid w$ starts with 'a' and ends with 'b' $\}$



Coder Bhai

(iv) L = { w/w not starting with 'a' or not ending with 'b' }

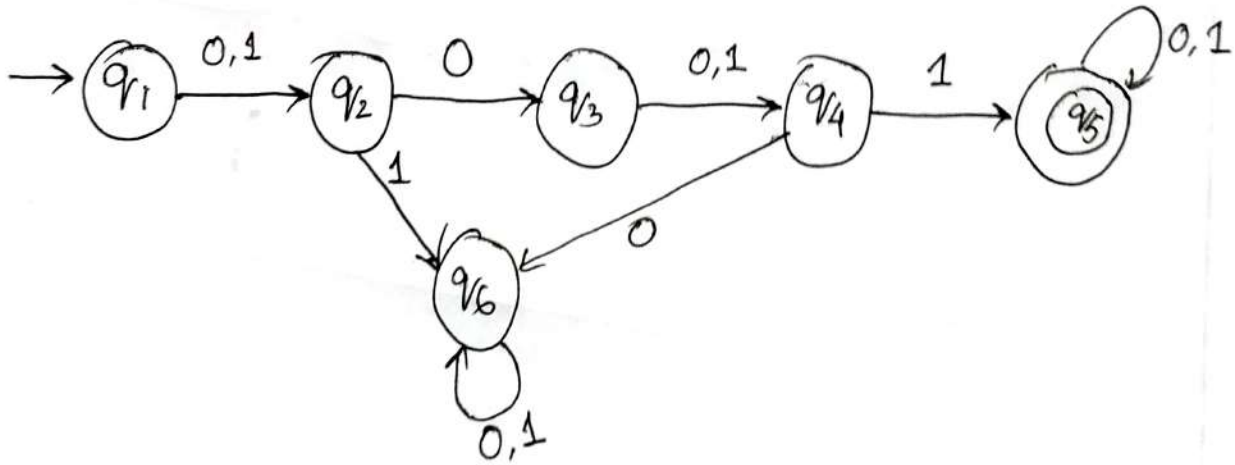


This is exactly opposite of question (iii).

Just compare.

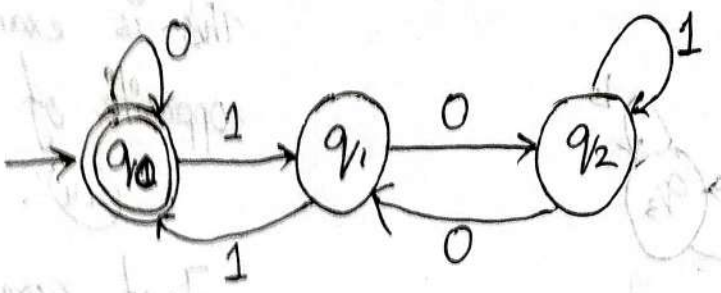
(v) L = { w/w accepts if the second symbol is '0' and fourth symbol '1' }

0/1 0 0/1 1



Coder Bhai

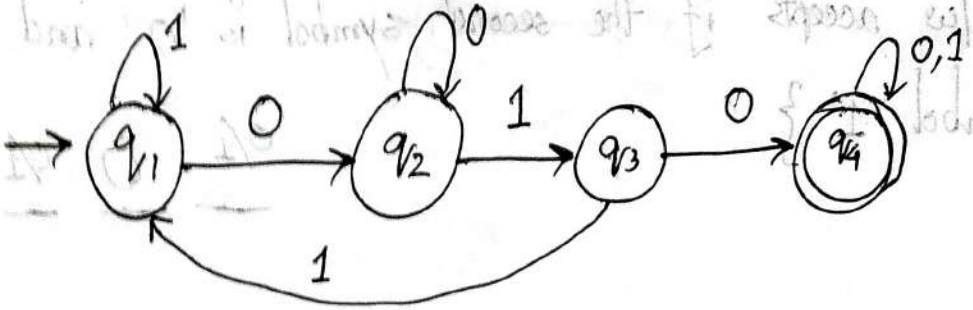
(VI) $L = \{ w \mid w$ divisible by $3 \}$



0 0 0 → 0
0 0 1 → 1
0 1 0 → 2
0 1 1 → 3
1 0 0 → 4
1 0 1 → 5
1 1 0 → 6
1 1 1 → 7

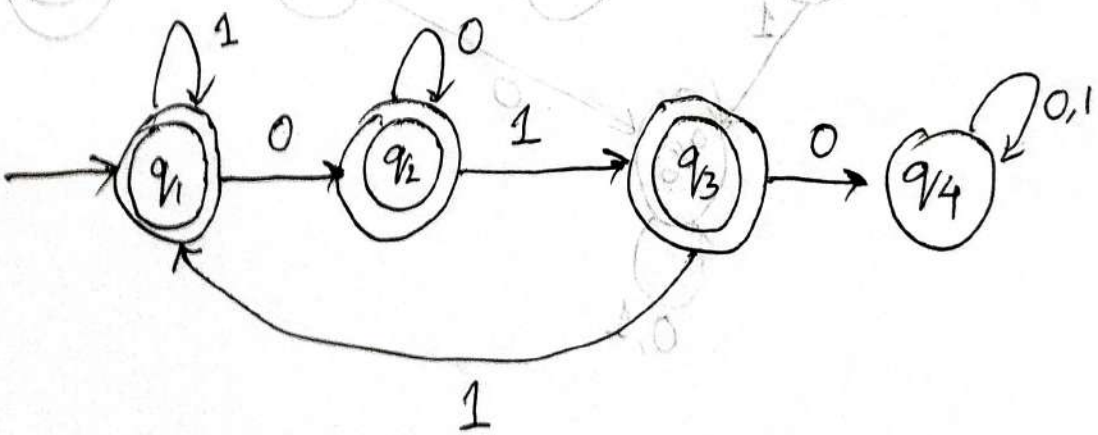
✓ ✓ ✓
0/3 , 3/3 , 6/3

(VII) $L = \{ w \mid w$ does not contain 010$\}$



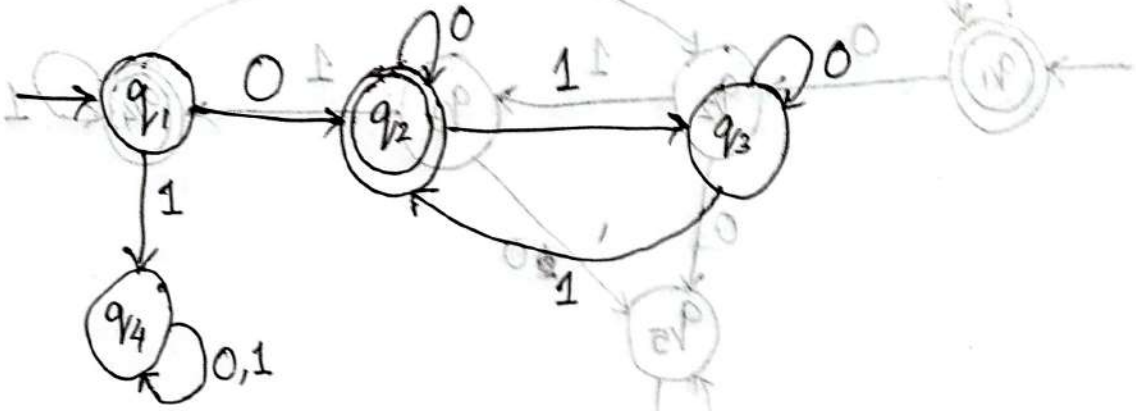
$q_0 = 0$
$q_2 = 2$
$q_1 = 1$

(VIII) $L = \{ w \mid w$ does not contain 010$\}$

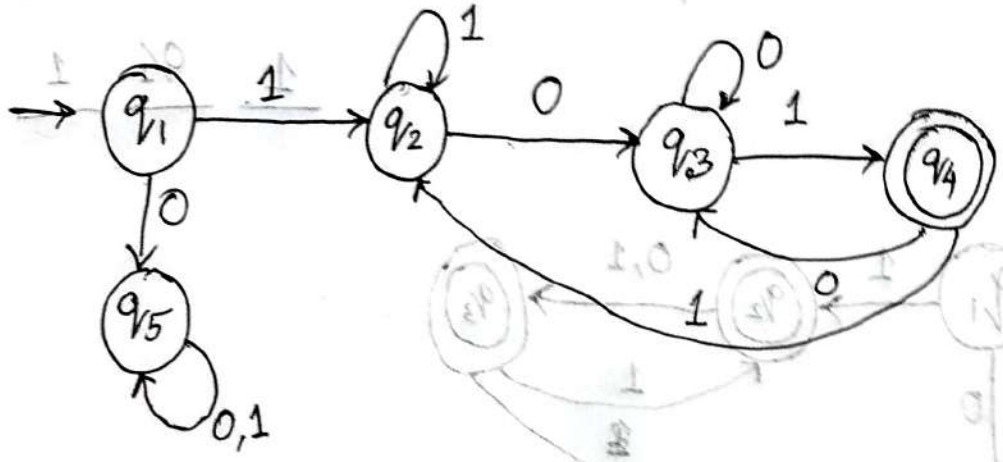


Coder Bhai

(IX) L = { w/w starts with 0 and contain even number of 1 }

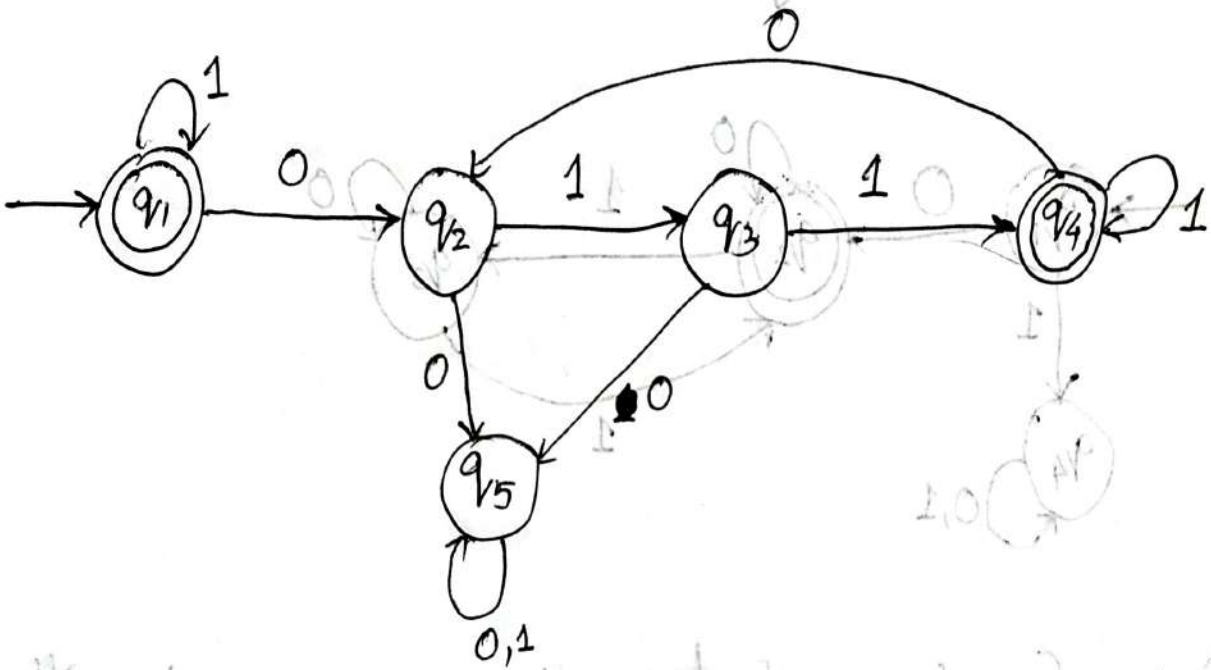


(X) L = { w/w starts with 1 and end with 01 }

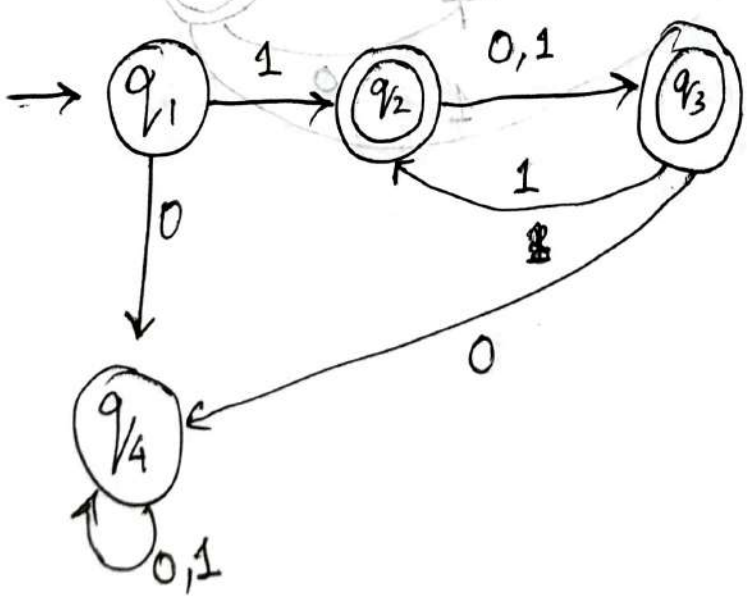


Coder Bhai

(XI) $L = \{ w \mid w$ every 0 is followed by at least two 1's$\}$



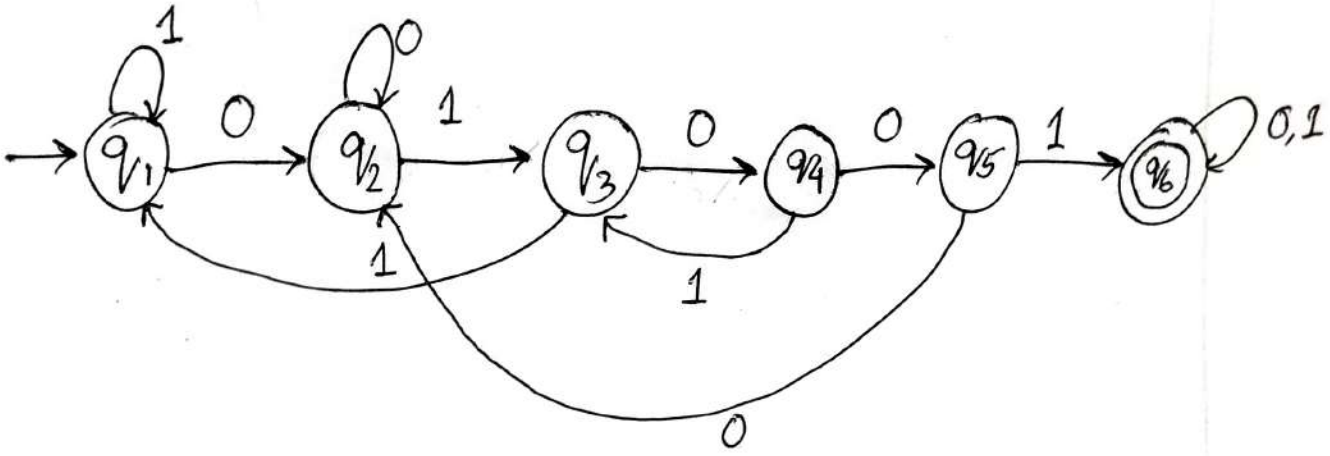
(XII) $L = \{ w \mid w$ every odd position of w must have 1$\}$



Coder Bhai

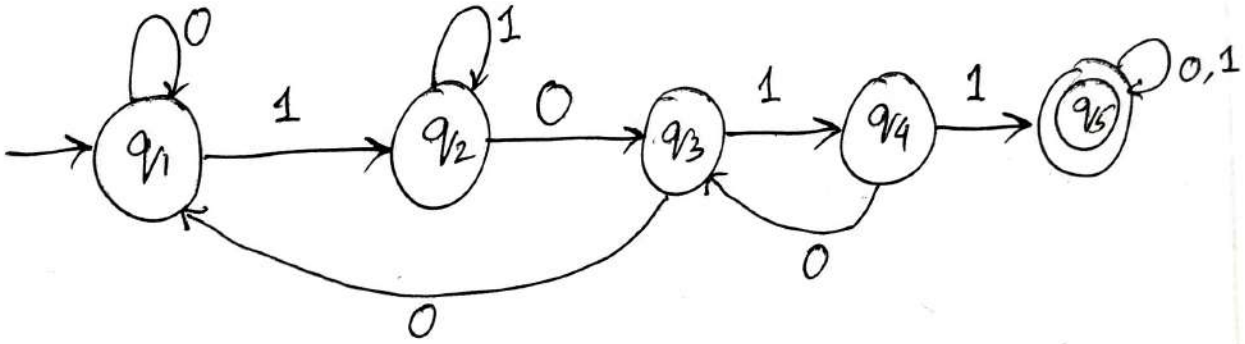
0101000

(XIII) $L = \{ w \mid w$ contains the substring 01001 $\}$



(XIV) $L = \{ w \mid w$ contains the substring 1011 $\}$

10010.10.

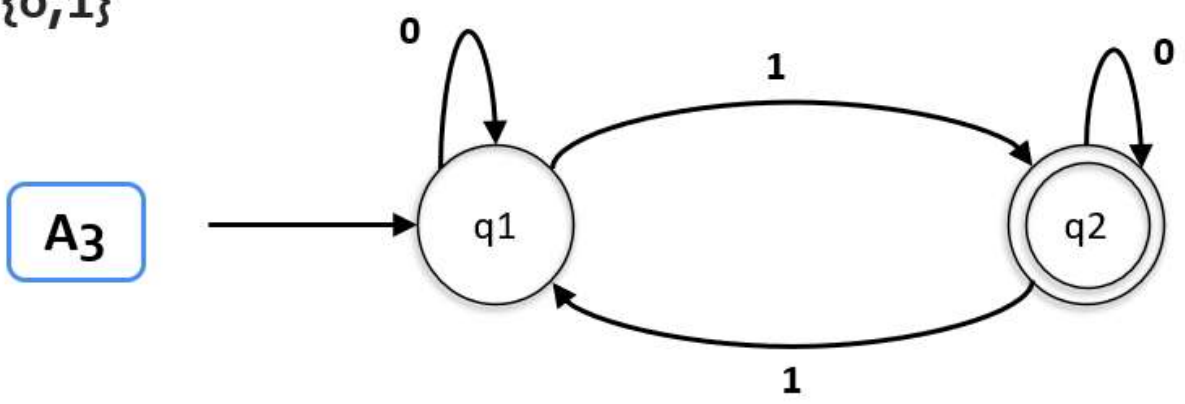


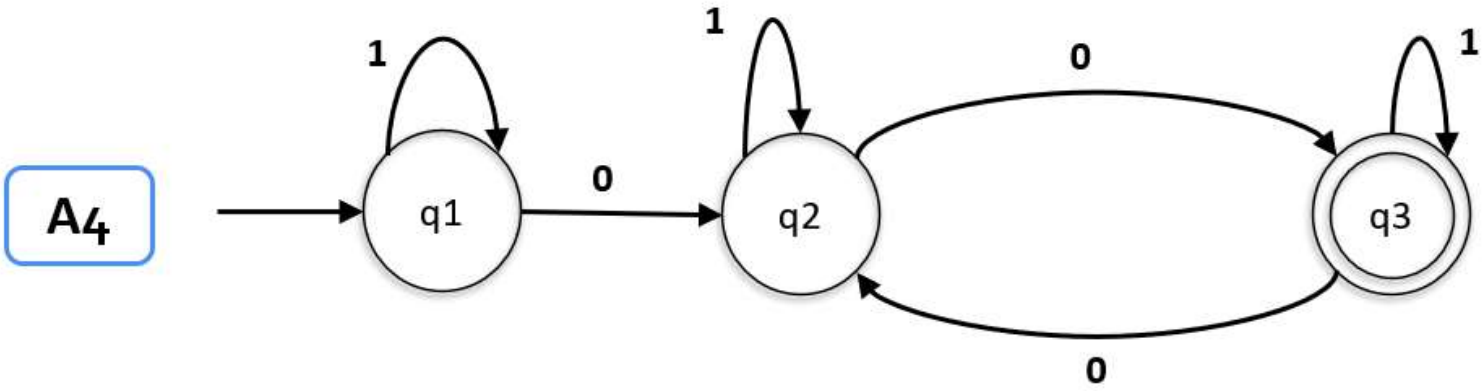
Coder Bhai

A_3 ={w : w is a binary string containing an odd number of 1s}.

A_4 ={w : w is a binary string containing an even number of 0s}.

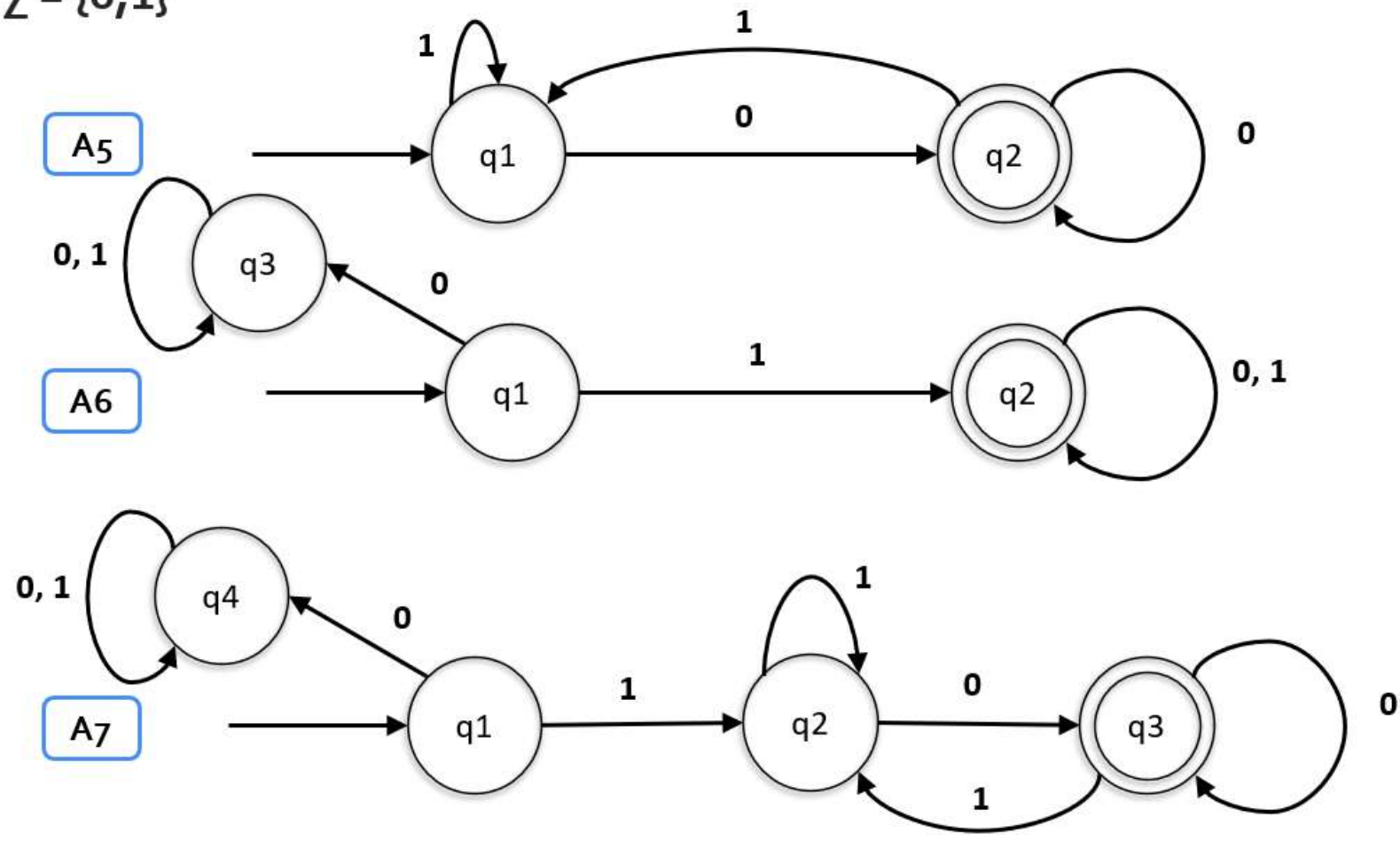
∑ = {0,1}





Coder Bhai

A5 ={w| w ends with a *0*}.
A6 ={w| w begins with a *1*}.
A7 ={w| w begins with a *1* and ends with a *0*}.
∑ = {0,1}



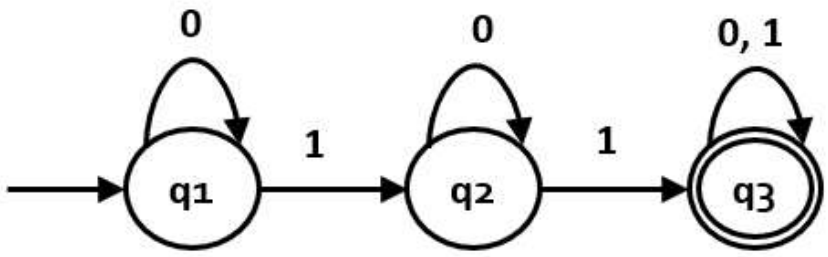
Coder Bhai

A8 ={w| w has at least two 1s}.

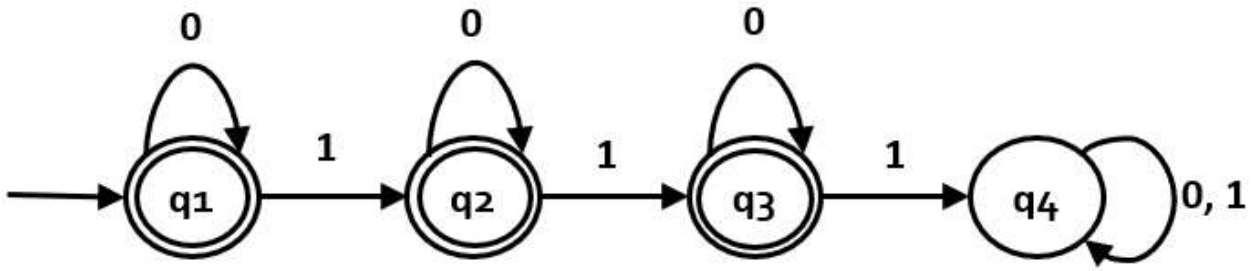
A9 ={w| w has at most two 1s}.

∑ = {0,1}

A8



A9



Coder Bhai