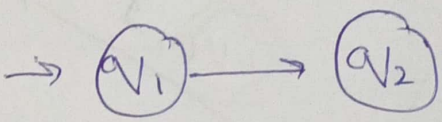
NFA (Non Deterministic Finite Automata)

5 - Tuples

$(Q, \Sigma, q_0, F, \delta)$

Just different in Transition Function

$$\delta : Q \times \Sigma \longrightarrow 2^Q \quad \text{(Power set)}.$$



$\{q_1, q_2\}$

→ Power set.

$$\{\varepsilon\}, \{q_1\}, \{q_2\} \{q_1, q_2\}$$

→ ONE Transition

→ NO Transition

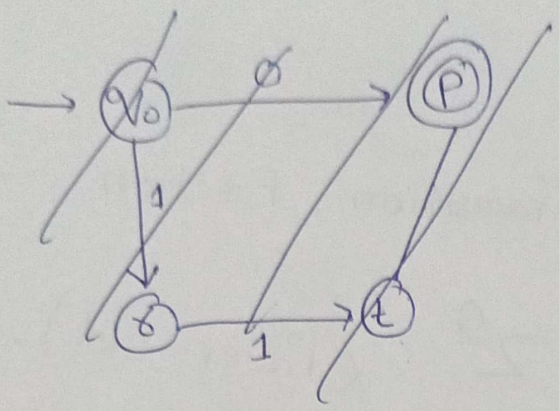
→ MORE Than ONE Transition.

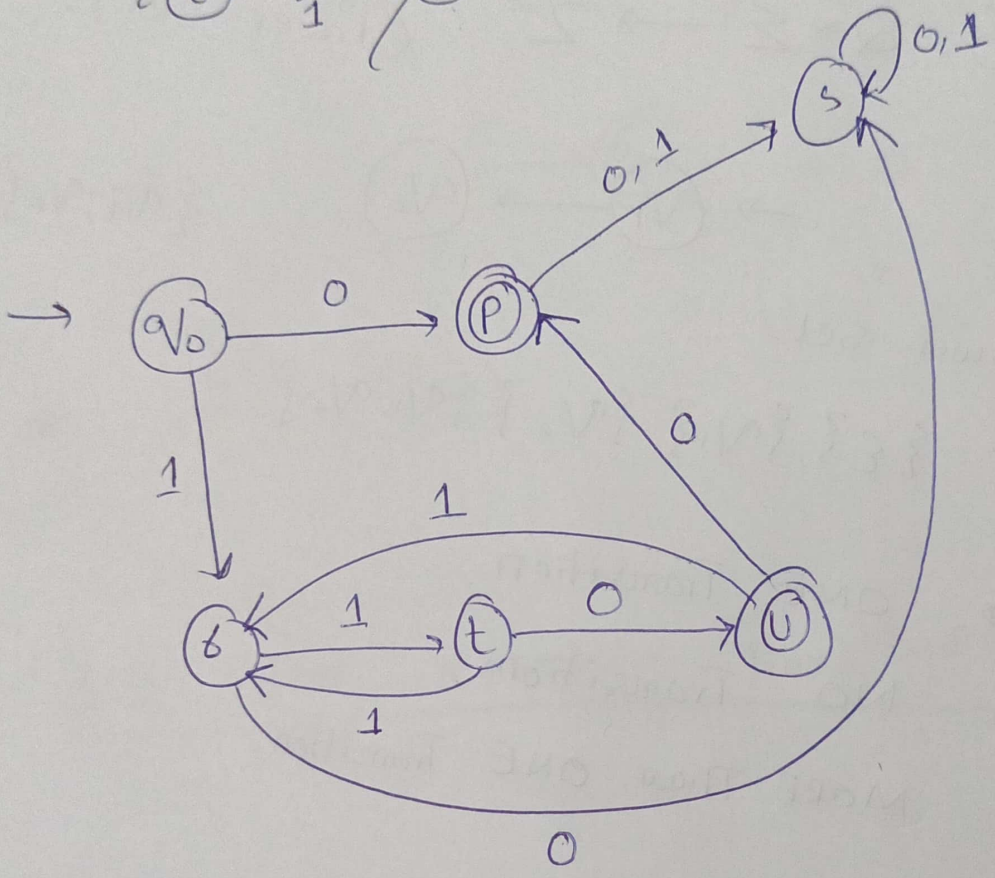
Q= Accepting $\{11, 110\}^*$ $\{0\}$

Accepting string:-

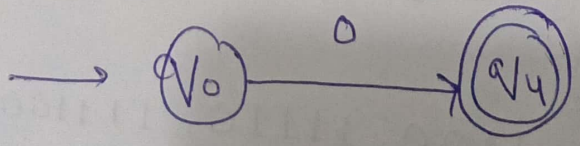
$\{0, 110, 1100, 11110, 111100 \ldots\}$

DFA

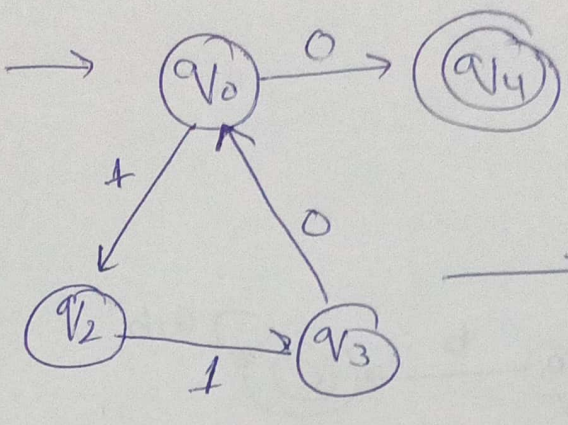




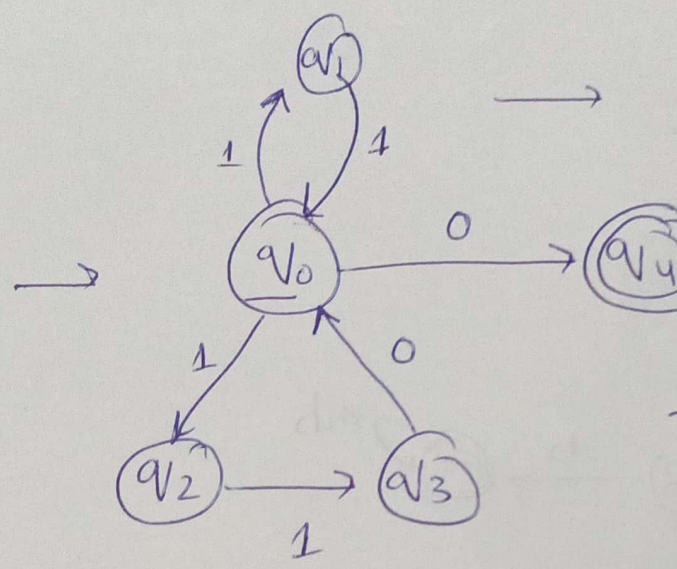
NFA



0 ✓



$\{110\}^* \{0\}$ ✓



$\{11\}^* 0$ ✓

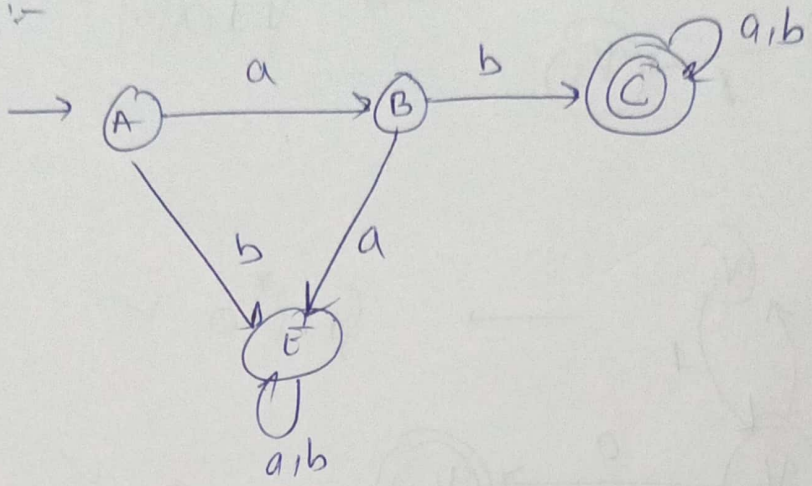
$\rightarrow 0$ ✓

$\rightarrow (110)^* 0$

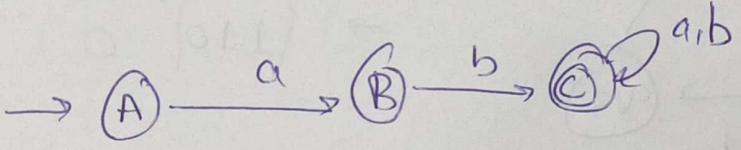
Just Need Necessary Transition

Start with ab

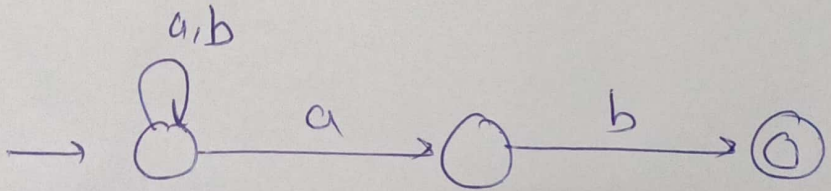
DFA :-



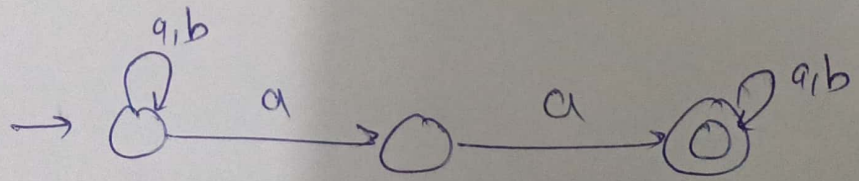
NFA :-



Ends with ab

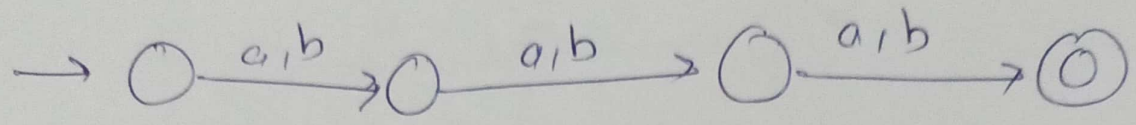


Accept XaaX (X means any string)



$\Sigma = \{a, b\}$

$|w| = 3$



→ Any string of 3 length

$|w| <= 3$