


# FLAT :-

## Unit-I

- ① DFA
- ② NFA
- ③ NFA-ε
- ④ NFA → DFA
- ⑤ NFA-ε → DFA → DFA
- ⑥ Moorey Machine ↩
- ⑦ Mealey Machine ↩

## Theory

## Dynamic Questions

- Q1 Theory ✓
- Q2 Procedure ✓
- Q3 Conversions ✓
- ~~Q4 Problems XXX~~
- 

**DFA**

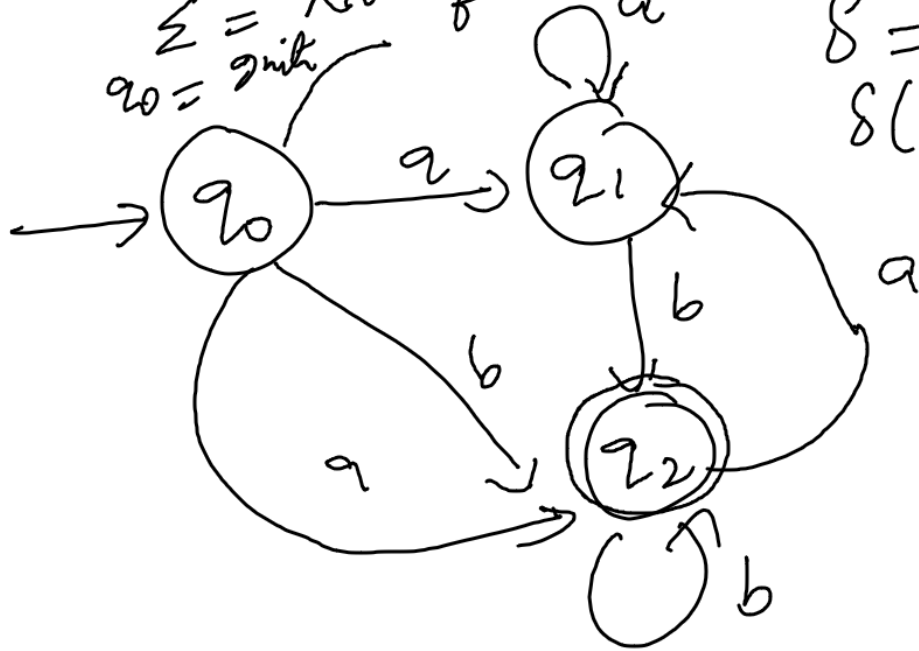
→ states

$$M = \{Q, \Sigma, \delta, q_0, F\}$$

$Q$  = No. of states

$\Sigma$  = No. of inputs

$q_0$  = initial



Initial

Final

Transition

input

$\delta$  = Transition f

$$\delta(q_0, a) = \{q_1, q_2\} \rightarrow q_0$$

In DFA

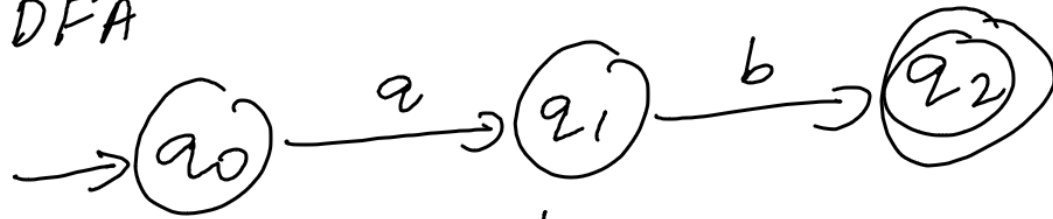
(1) The transition table must not contain null value

(2) The cell must contain only one state.

	a	b
$q_0$	$\{q_1, q_2\}$	$\{q_2\}$
$q_1$	$\{q_1\}$	$\{q_2\}$
$q_2$	$\{q_1\}$	$\{q_2\}$

Transition table

NFA to  
DFA



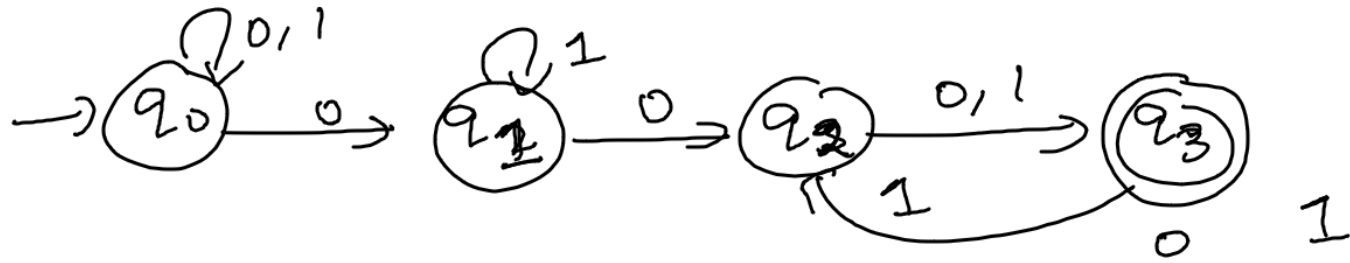
	a	b
$\rightarrow q_0$	$\{q_1\}$	$\{\emptyset\}$
$q_1$	$\{\emptyset\}$	$\{q_2\}$
$\ast q_2$	$\{\emptyset\}$	$\{\emptyset\}$

step 1:- Draw a Transition table by taking initial state

	a	b
$\rightarrow q_0$	$q_1$	$\emptyset$
$q_1$	$\emptyset$	$q_2$
$\ast q_2$	$\emptyset$	$\emptyset$
$\emptyset$	$\emptyset$	$\emptyset$

step 2:- check whether there is a new state in the table

$q_0$	$q_1$	$\emptyset$
$q_1$	$\emptyset$	$q_2$
$q_2$	$\emptyset$	$\emptyset$



	0	1
q0	{q0, q1}	{q0}
q1	{q2}	{q1}
q2	{q3}	{q3} X
q3	{ $\phi$ }	{q2}

	0	1
q0	{q <sub>0</sub> <sup>✓</sup> 1}	{q <sub>0</sub> <sup>✓</sup> }
q <sub>0</sub> 1	{q <sub>0</sub> 1 <sup>✓</sup> 2}	{q <sub>0</sub> 1 <sup>✓</sup> }
q <sub>0</sub> 12	{q <sub>0</sub> 123}	{q <sub>0</sub> 13}
q <sub>0</sub> 123	{q <sub>0</sub> 123}	{q <sub>0</sub> 123}
q <sub>0</sub> 13	{q <sub>0</sub> 12}	{q <sub>0</sub> 12}

