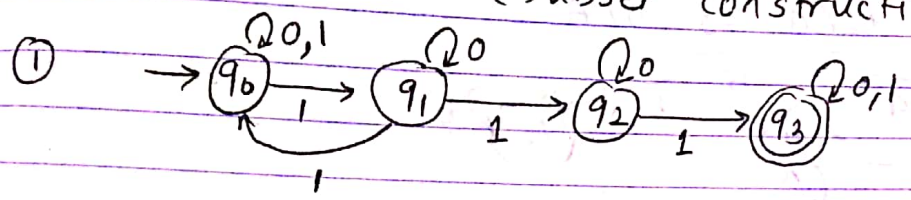
NFA (without ϵ) to DFA

NFA — DFA (subset construction method)



step 1 - Identify given NFA

$M = (Q, \Sigma, \delta, q_0, F)$ $\quad Q = \{q_0, q_1, q_2, q_3\}$

$\Sigma = \{0, 1\}$

$q_0 = q_0 \quad F = \{q_3\}$

$\delta : Q \times \Sigma \rightarrow 2^Q$

Q	Σ: 0	1
→ q_0	$\{q_0\}$	$\{q_0, q_1\}$
q_1	$\{q_1\}$	$\{q_1, q_2\}$
q_2	$\{q_2\}$	$\{q_3\}$
* q_3	$\{q_3\}$	$\{q_3\}$

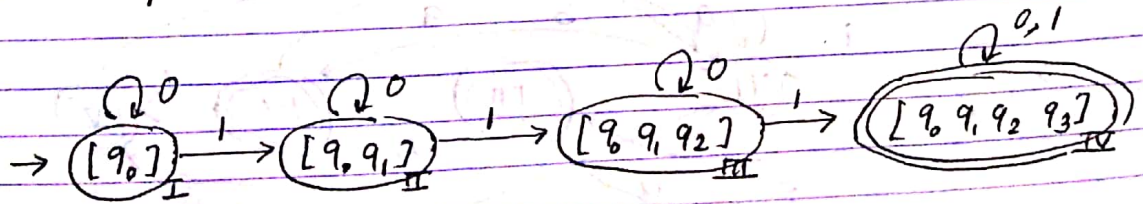
$\delta([q_0 q_1], 0) = [\delta(q_0, 0), \delta(q_1, 0)]$

step 2 :- equivalent DFA is $M' = (Q', \Sigma', \delta', q_0', F')$

$\Sigma' = \Sigma = \{0, 1\}$

$q_0' = [q_0]$ = initial state of NFA (representation change.)

Q	Σ: 0	1
→ $[q_0]$ I	$[q_0]_I$	$[q_0, q_1]_{II}$
$[q_0 q_1]$ II	$[q_0, q_1]_{II}$	$[q_0, q_1, q_2]_{III}$
$[q_0, q_1, q_2]$ III	$[q_0 q_1 q_2]_{III}$	$[q_0, q_1, q_2, q_3]_{IV}$
* $[q_0 q_1 q_2 q_3]$ IV	$[q_0 q_1 q_2 q_3]_{IV}$	$[q_0 q_1 q_2 q_3]_{IV}$



$Q' = \{[q_0]_I, [q_0 q_1]_{II}, [q_0 q_1 q_2]_{III}, [q_0 q_1 q_2 q_3]_{IV}\}$

$F' = \{[q_0 q_1 q_2 q_3]_{IV}\}$