

## NDFA to DFA

Ques:  $\rightarrow M = (\{q_0, q_1\}, \{0, 1\}, \delta, q_0, \{q_0\})$

| State / $\Sigma$  | 0     | 1          |
|-------------------|-------|------------|
| $\rightarrow q_0$ | $q_0$ | $q_1$      |
| $q_1$             | $q_1$ | $q_0, q_1$ |

Construct a DFA of given NDFA

Sol: states are subsets of

(i)  $\{q_0, q_1\} = \phi, [q_0], [q_1], [q_0, q_1]$

(ii)  $[q_0]$  is initial state

(iii)  $[q_0], [q_0, q_1]$  are final states

(iv)  $\delta = ?$

| State / $\Sigma$ | 0            | 1            |
|------------------|--------------|--------------|
| $\phi$           | $\phi$       | $\phi$       |
| $[q_0]$          | $[q_0]$      | $[q_1]$      |
| $[q_1]$          | $[q_1]$      | $[q_0, q_1]$ |
| $[q_0, q_1]$     | $[q_0, q_1]$ | $[q_0, q_1]$ |

Q.:-  $M = ([q_0, q_1, q_2, q_3], \{0, 1\}, \delta, q_0, \{q_3\})$

| State / $\Sigma$  | 0          | 1     |
|-------------------|------------|-------|
| $\rightarrow q_0$ | $q_0, q_1$ | $q_0$ |
| $q_1$             | $q_2$      | $q_1$ |
| $q_2$             | $q_3$      | $q_3$ |
| $(q_3)$           | $\wedge$   | $q_2$ |

Construct a DFA of given NFA

Sol:-

$S = ?$

$T =$  set of all  $[q_i]$  subset

| State / $\Sigma$       | 0                      | 1                      |
|------------------------|------------------------|------------------------|
| $[q_0]$                | $[q_0, q_1]$           | $[q_0]$                |
| $[q_0, q_1]$           | $[q_0, q_1, q_2]$      | $[q_0, q_1]$           |
| $[q_0, q_1, q_2]$      | $[q_0, q_1, q_2, q_3]$ | $[q_0, q_1, q_2]$      |
| $[q_0, q_1, q_2, q_3]$ | $[q_0, q_1, q_2, q_3]$ | $[q_0, q_1, q_2, q_3]$ |
| $[q_0, q_1, q_2]$      | $[q_0, q_1, q_2]$      | $[q_0, q_1, q_2]$      |
| $[q_0, q_1, q_3]$      | $[q_0, q_1, q_3]$      | $[q_0, q_1, q_3]$      |
| $[q_0, q_1, q_2, q_3]$ | $[q_0, q_1, q_2, q_3]$ | $[q_0, q_1, q_2, q_3]$ |