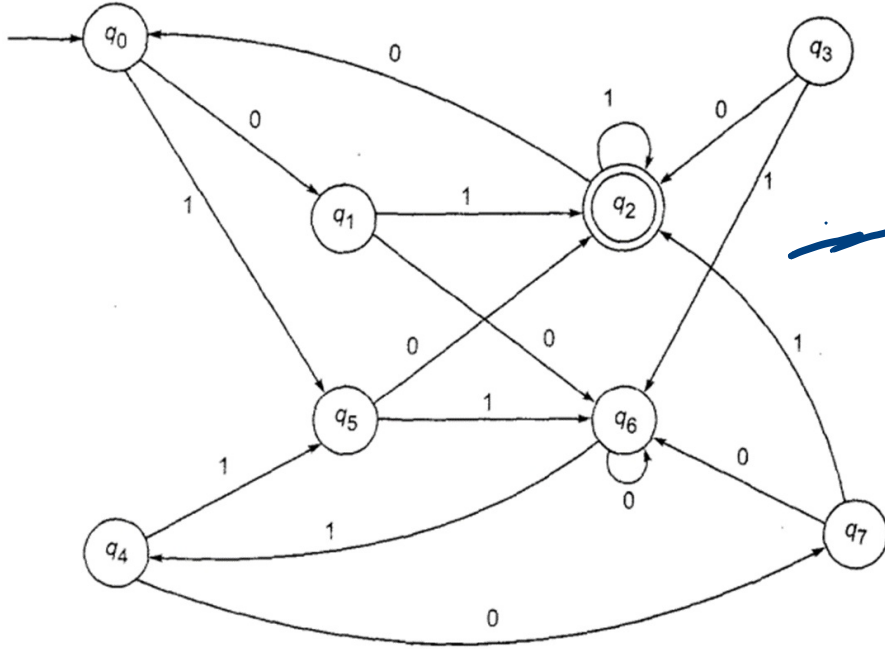


↓ DFA



State/ Σ	0	1
$\rightarrow q_0$	q_1	q_5
q_1	q_6	q_2
$\odot q_2$	q_0	q_2
q_3	q_2	q_6
q_4	q_7	q_5
q_5	q_2	q_6
q_6	q_6	q_4
q_7	q_6	q_2

→ Check final & Non final states

→ Similarity

→ Minimized

State/ Σ	0	1
$\rightarrow q_0$	q_1	q_5
q_1	$\overline{q_6}$	$\overline{q_2}$
$\odot q_2$	q_0	$\overline{q_2}$
q_3	q_2	q_6
q_4	$\overline{q_7}$	q_5
q_5	$\overline{q_2}$	q_6
q_6	q_6	q_4
q_7	q_6	q_2

1) separate set of final & Non final states

$$\Pi_1 = \underbrace{\{q_2\}}_A \underbrace{\{q_0, q_1, q_3, q_4, q_5, q_6\}}_B$$

Note :- Set can't be

formed of final & Non final

Exclude unreachable state

2) check transition of Every state

$$\begin{aligned} q_0 &= BB \\ q_1 &= \overline{B}A \\ q_3 &= AB \end{aligned}$$

$$\begin{aligned} \Pi_2 &= \{q_0, q_4, q_6\} \\ q_4 &= \overline{B}B \\ q_5 &= \overline{A}B \\ q_6 &= \overline{B}B \\ q_7 &= \overline{B}A \end{aligned}$$

$$\{q_1, q_7\}$$

$$\{q_3, q_5\} \{q_2\}$$

State/ Σ	0	1
$\rightarrow q_0$	<u>q_1</u>	<u>q_5</u>
q_1	<u>q_6</u>	q_2
$\odot q_2$	q_0	q_2
q_3	q_2	q_6
q_4	<u>q_7</u>	q_5
q_5	<u>q_2</u>	<u>q_6</u>
q_6	q_6	q_4
q_7	q_6	q_2

$$\Pi_1 = \{q_2\} \{q_0, q_1, q_3, q_4, q_5\}$$

$$\Pi_2 = \{q_2\} \{q_0, q_4, q_6\} \{q_1, q_7\} \{q_3, q_5\}$$

$$\Pi_3 = \{q_2\} \{q_0, q_4\} \{q_1, q_7\} \{q_3, q_5\}$$

$$\Pi_4 = \{q_1, q_7\} \{q_3, q_5\} \{q_2\} \{q_6\}$$

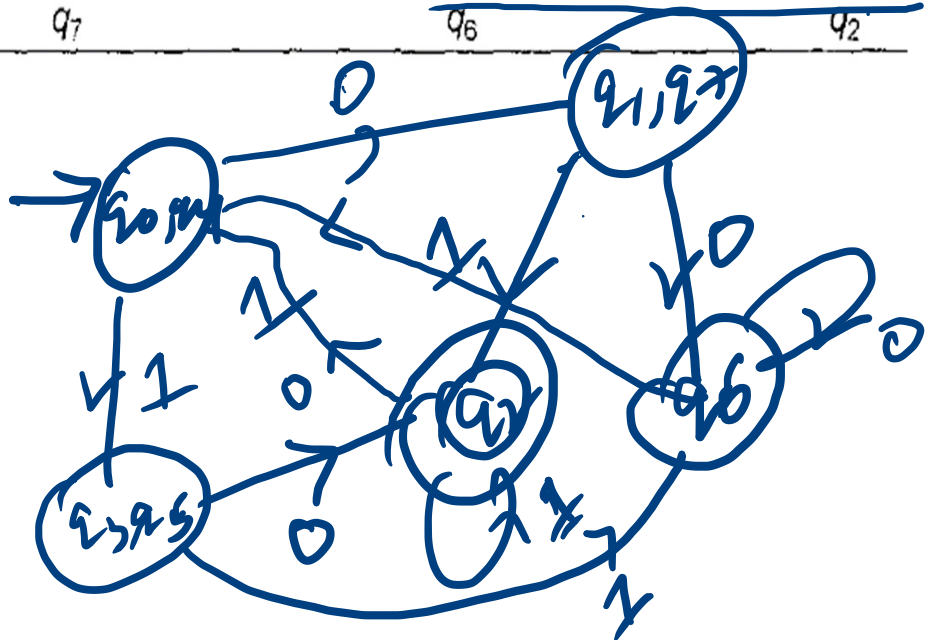
$$\Pi_3 = \Pi_4$$

$$\begin{aligned} q_0 &= CD \checkmark \\ q_1 &= BA \\ q_3 &= AB \\ q_4 &= CD \checkmark \\ q_5 &= AB \\ q_6 &= BB \\ q_7 &= BA \end{aligned}$$

$$\begin{aligned} q_0 &= CD \\ q_4 &= CD \end{aligned}$$



State/ Σ	0	1
$\rightarrow q_0$	<u>q_1</u>	q_5
q_1	q_6	<u>q_2</u>
<u>q_2</u>	<u>q_0</u>	q_2
q_3	q_2	q_6
q_4	q_7	q_5
q_5	<u>q_2</u>	q_6
q_6	q_6	q_4
q_7	<u>q_6</u>	q_2



$\Pi_1 = \{q_2\} \{q_6\}$ ^{✓ minimized} DFA

$\{q_0, q_4\}$ $\{q_1, q_7\}$ $\{q_3, q_5\}$

	0	1
$\rightarrow q_0, q_4$	q_1, q_7	q_3, q_5
q_1, q_7	q_6	q_2
q_3, q_5	q_2	q_6
<u>q_2</u>	q_0, q_4	q_2
q_6	q_6	q_0, q_4

EXAMPLE 3.21

Construct a minimum state automaton equivalent to a DFA whose transition table is defined by Table 3.30.

TABLE 3.30 DFA of Example 3.21

State	a	b
→q ₀	q ₁	q ₂
q ₁	q ₄	q ₃
q ₂	q ₄	q ₃
⊙q ₃	q ₅	q ₆
⊙q ₄	q ₇	q ₆
q ₅	q ₃	q₆
q ₆	q ₆	q ₆
q ₇	q ₄	q ₆

$\pi_3 = \pi_4$

$\pi_1 = \overset{A}{\{q_3, q_4\}} \overset{B}{\{\{q_0, q_1, q_2, q_5, q_6, q_7\}\}}$

$\pi_2 = \overset{A}{\{q_3, q_4\}} \overset{B}{\{\{q_0, q_6\}\}} \overset{C}{\{\{q_1, q_2\}\}} \overset{D}{\{\{q_5, q_7\}\}}$

~~$\pi_3 = \overset{A}{\{q_3, q_4\}} \overset{B}{\{\{q_0\}\}} \overset{C}{\{\{q_6\}\}} \overset{D}{\{\{q_1, q_2\}\}} \overset{E}{\{\{q_5, q_7\}\}}$~~

$\pi_4 = \{q_3, q_4\} \{q_0\} \{q_6\} \{q_1, q_2\} \{q_5, q_7\}$