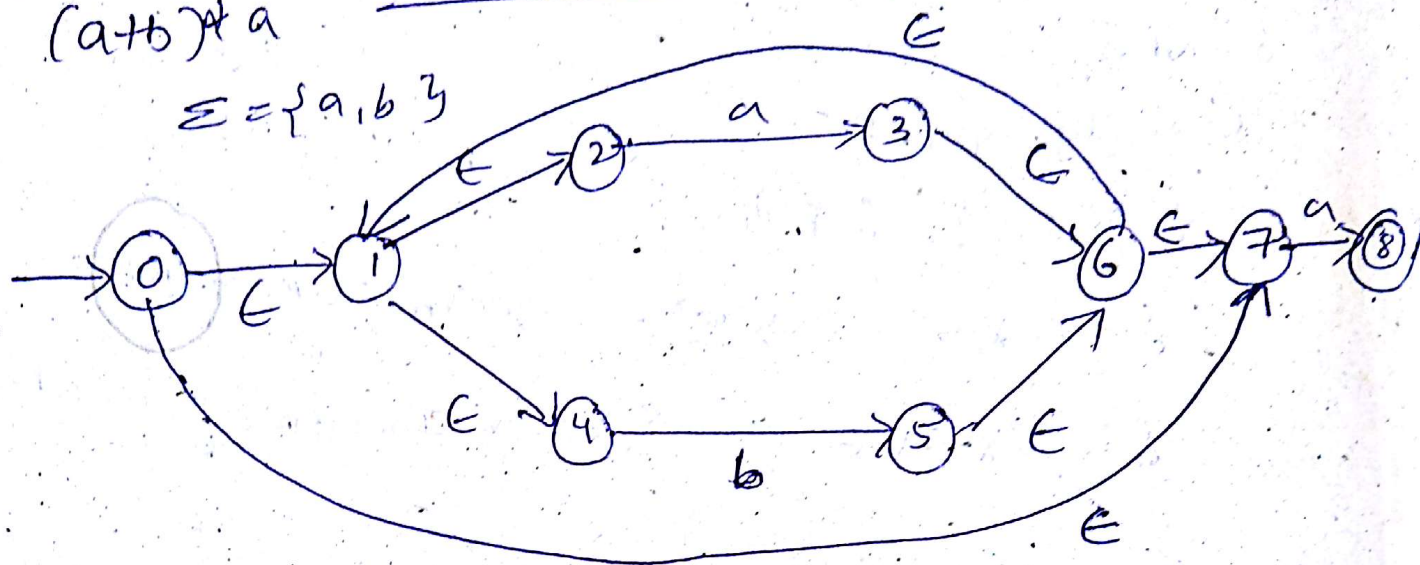


✓ $(a+b)^*a$ $\xrightarrow{\text{NFA to DFA}}$



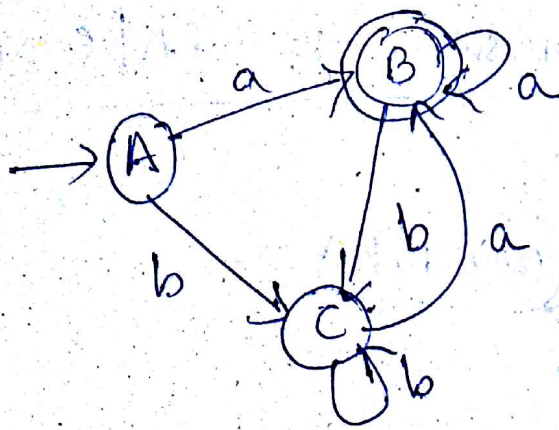
$$A = \epsilon\text{-closure}(0) = \{0, 1, 2, 4, 7\} \quad \leftarrow A$$

$$\begin{aligned} \delta(A, a) &= \epsilon\text{-closure}(\delta(\{0, 1, 2, 4, 7\}, a)) \\ &= \epsilon\text{-closure}(\delta(0, a) \cup \delta(1, a) \cup \delta(2, a) \cup \delta(4, a) \cup \delta(7, a)) \\ &= \epsilon\text{-closure}(3, 8) \end{aligned}$$

$$= \{3, 6, 1, 7, 4, 8\} \quad \leftarrow B$$

$$\begin{aligned} \delta(A, b) &= \epsilon\text{-closure}(\delta(\{0, 1, 2, 4, 7\}, b)) \\ &= \epsilon\text{-closure}(\delta(0, b) \cup \delta(1, b) \cup \delta(2, b) \cup \delta(4, b) \cup \delta(7, b)) \\ &= \epsilon\text{-closure}(5) \end{aligned}$$

$$= \{5, 6, 1, 7, 2, 4\} \quad \leftarrow C$$



$$\begin{aligned}
 \delta(B, a) &= \epsilon\text{-closure}(\delta(\{3, 6, 1, 7, 2, 4, 8\}, a)) \\
 &= \epsilon\text{-closure}(3, 8) \\
 &= \{3, 6, 1, 7, 2, 4, 8\} = B
 \end{aligned}$$

$$\begin{aligned}
 \delta(B, b) &= \epsilon\text{-closure}(\delta(\{3, 6, 1, 7, 2, 4, 8\}, b)) \\
 &= \epsilon\text{-closure}(5) \\
 &= \{5, 6, 1, 7, 2, 4\} = C
 \end{aligned}$$

$$\begin{aligned}
 \delta(C, a) &= \epsilon\text{-closure}(\delta(\{5, 6, 1, 7, 2, 4\}, a)) \\
 &= \epsilon\text{-closure}(3, 8) \\
 &= \{3, 6, 1, 7, 2, 4, 8\} = B
 \end{aligned}$$

$$\begin{aligned}
 \delta(C, b) &= \epsilon\text{-closure}(\delta(\{5, 6, 1, 7, 2, 4\}, b)) \\
 &= \epsilon\text{-closure}(5) \\
 &= \{5, 6, 1, 7, 2, 4\} = C
 \end{aligned}$$

$\delta(\emptyset$