Tutorial 1

1. Regular expression $= (a|b)^2$

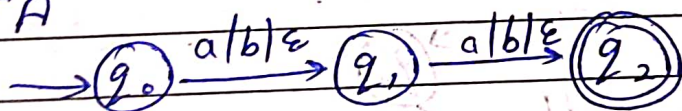   NFA
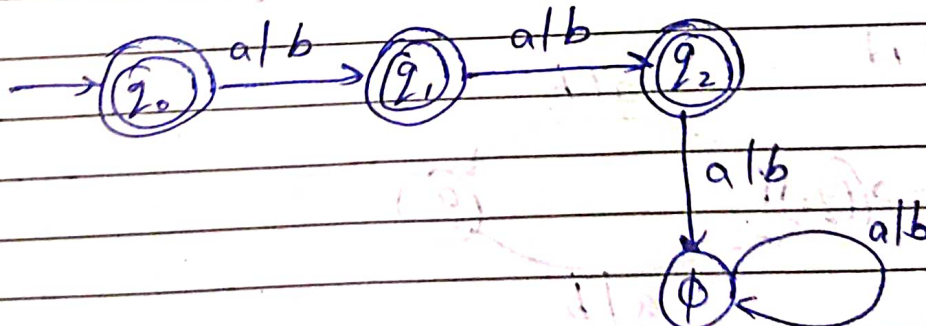

   $q_0 \xrightarrow{a|b} q_1 \xrightarrow{a|b} q_2$
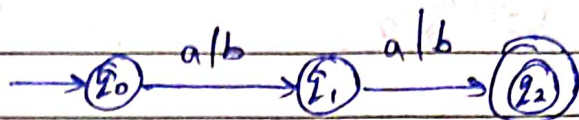
   DFA
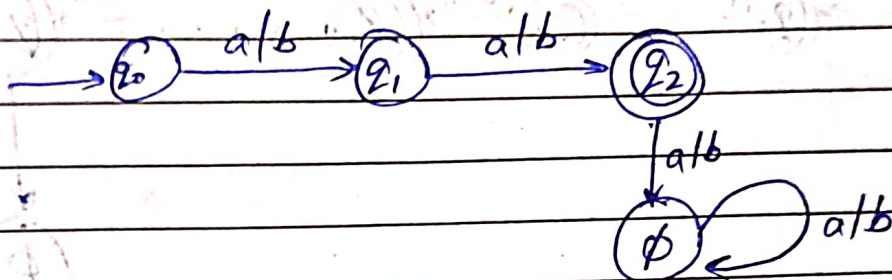
2. Regular expression $= (a|b) | \varepsilon | (a|b)^2$
   $= (a|b|\varepsilon)^2$

   NFA

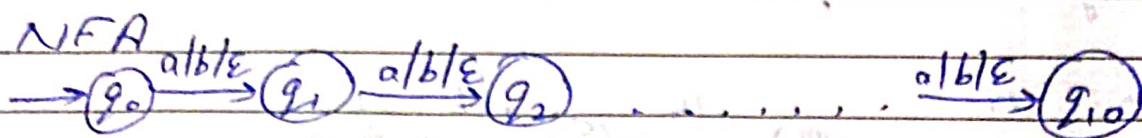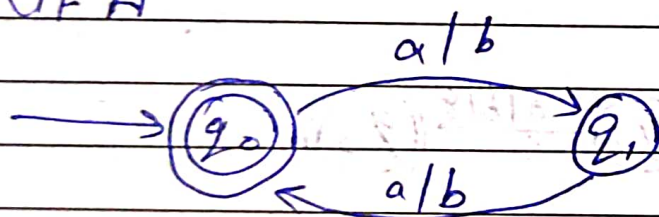 $q_0 \xrightarrow{a|b|\varepsilon} q_1 \xrightarrow{a|b|\varepsilon} q_2$

   DFA

3. Regular expression = $(a/b/\varepsilon)^{10}$

NFA

$$\xrightarrow{} (q_0) \xrightarrow{a/b/\varepsilon} (q_1) \xrightarrow{a/b/\varepsilon} (q_2) \quad \cdots \cdots \quad \xrightarrow{a/b/\varepsilon} (q_{10})$$

DFA

$$\xrightarrow{} ((q_0)) \xrightarrow{a/b} ((q_1)) \xrightarrow{a/b} ((q_2)) \quad \cdots \cdots \xrightarrow{a/b} ((q_{10}))$$

$$\downarrow a/b$$

$$(p) \quad \circlearrowright a/b$$
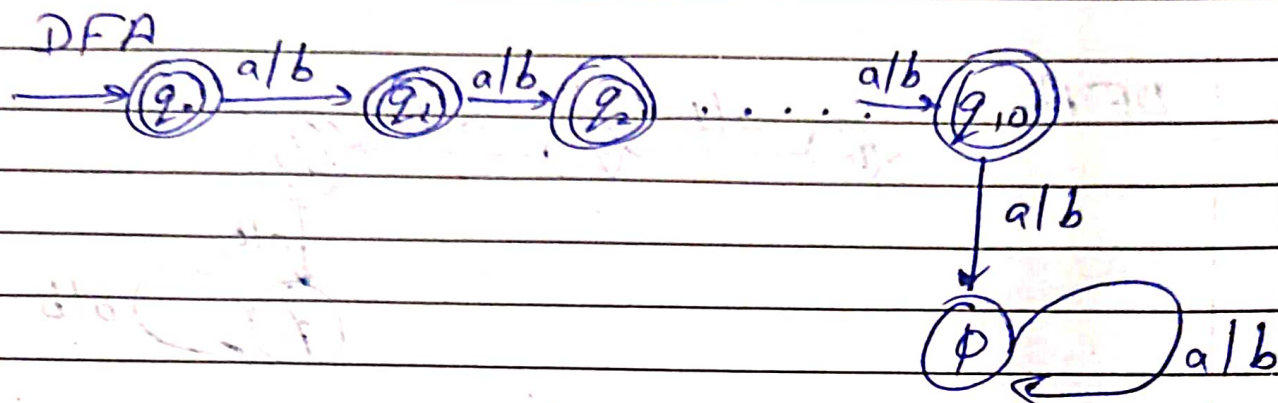
4. Regular expression = $((a/b)^2)^*$

NFA

$$\xrightarrow{} ((q_0)) \underset{a/b}{\overset{a/b}{\rightleftarrows}} (q_1)$$

DFA

$$\xrightarrow{} ((q_0)) \underset{a/b}{\overset{a/b}{\rightleftarrows}} (q_1)$$

5. Regular Expression $= (a|b)\,((a|b)^2)^*$

NFA

DFA

6. Regular Expression $= (01)^*\,000\,(01)^*$

NFA

DFA

7. Regular Expression = $(1^* 0 1)^*$

NFA

DFA

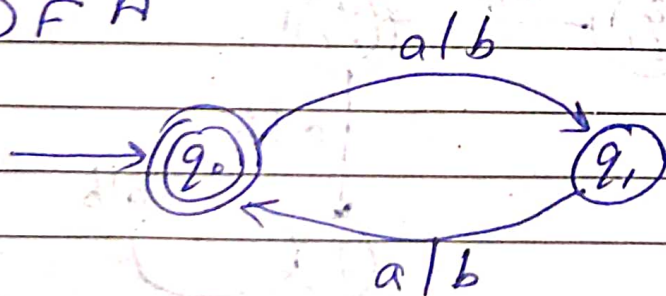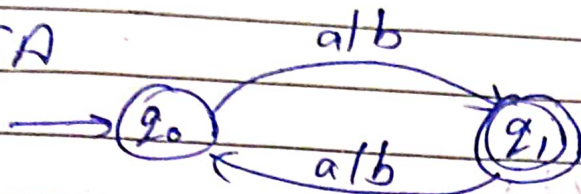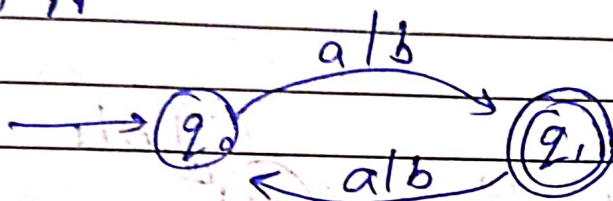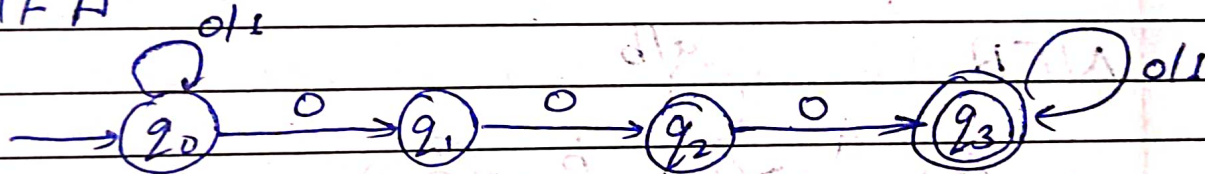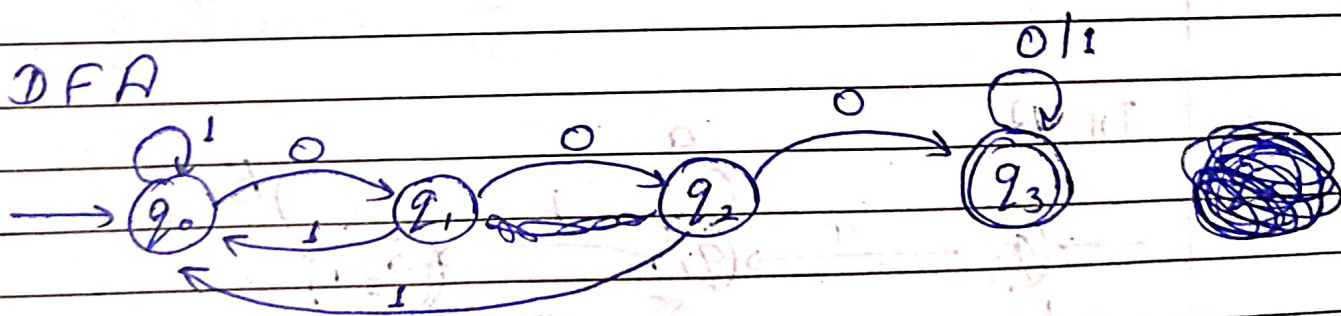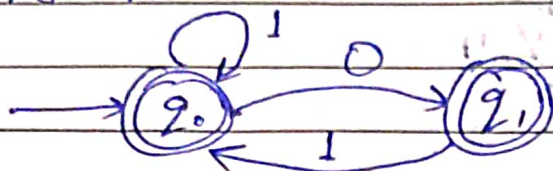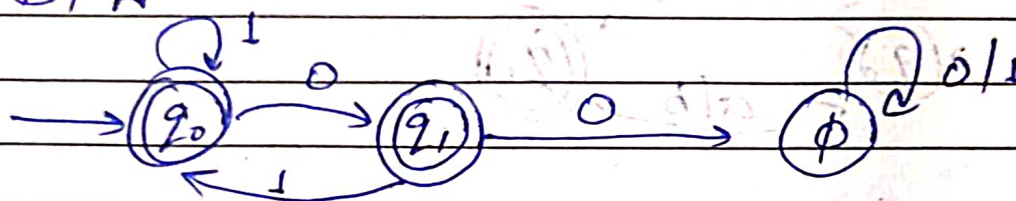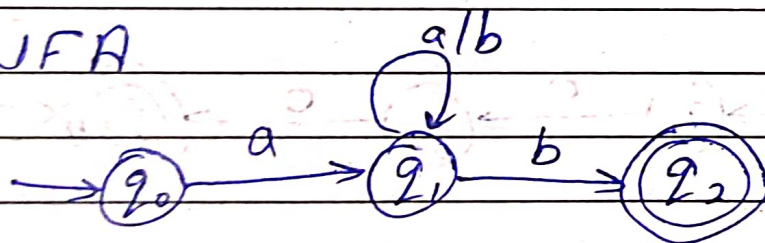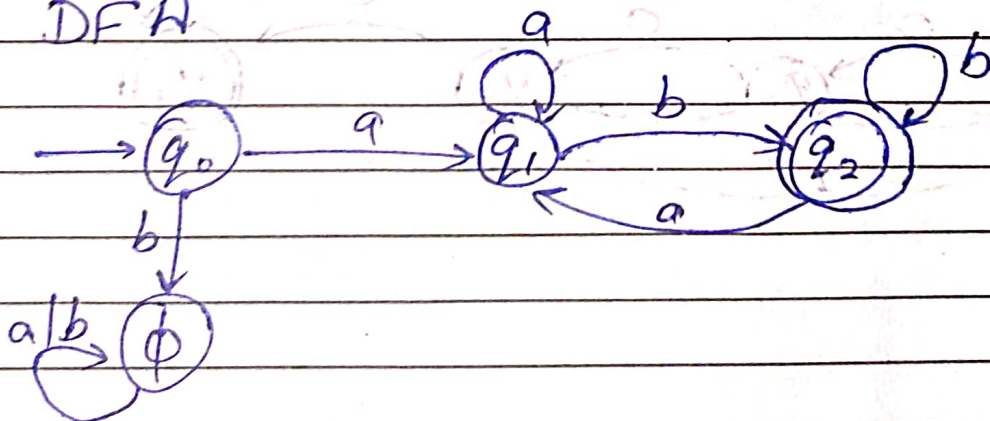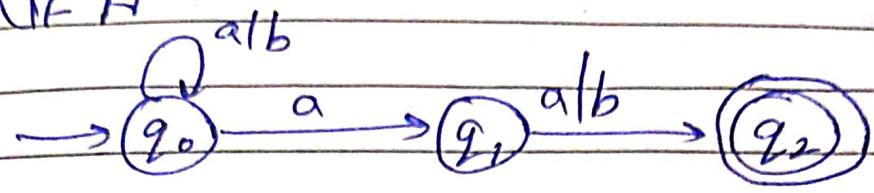8. Regular Expression = $a(a|b)^* b$
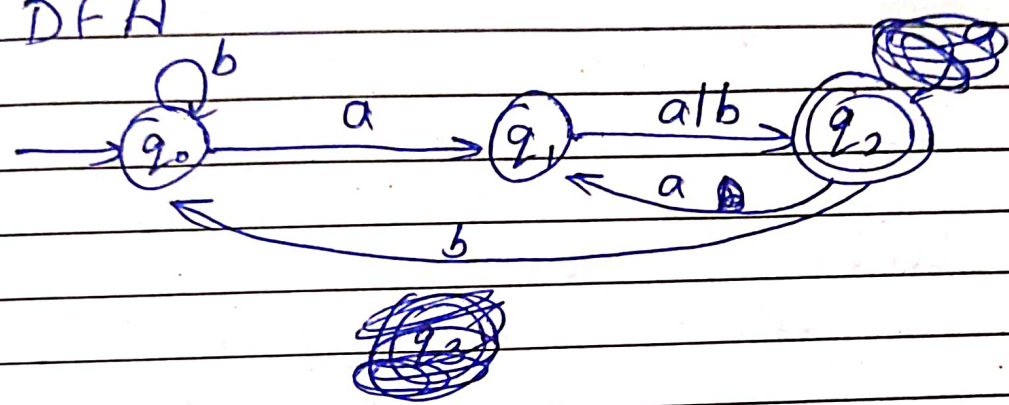
NFA
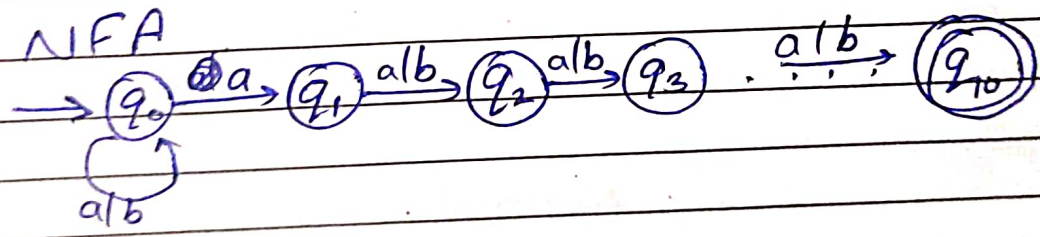

DFA

9. Regular expression = $(a|b)^* a (a|b)$

NFA

DFA

10. Regular expression = $(a|b)^* a (a|b)^9$

NFA

DFA