AFN $\longrightarrow$ AFD $\quad O(2^Q)$

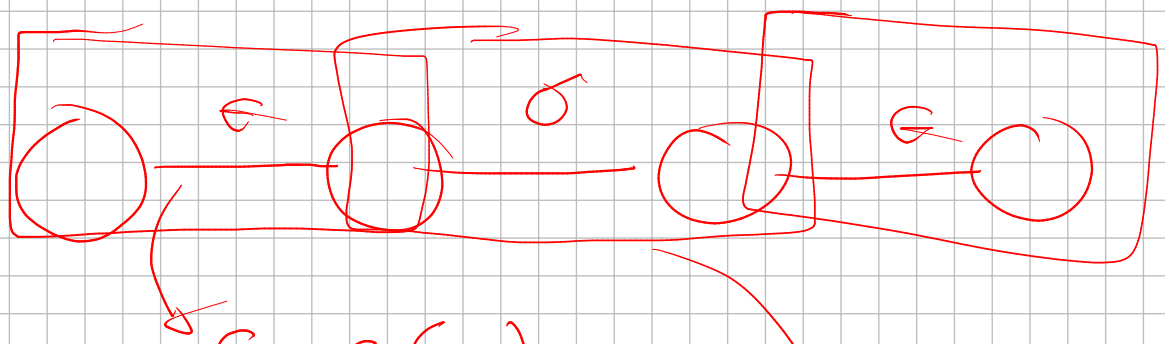
$R \longrightarrow F$

$j = -1 \longrightarrow 1$

$R \quad 4 \longrightarrow n$

$AFN_\epsilon \longrightarrow AFN$

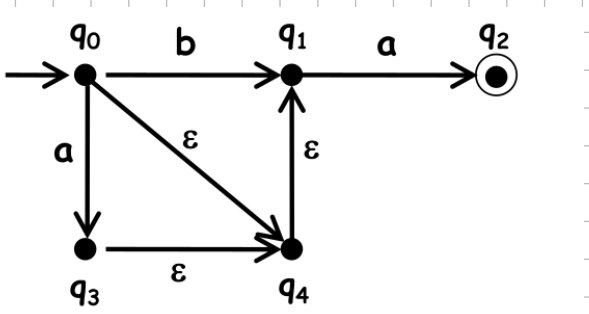
$\sum = \{q, \delta\} \cup \epsilon$



$\epsilon - c(q)$

$\delta(\epsilon - c(q), \sigma)$

$\epsilon - c(\delta(\epsilon - c(q), \sigma))$



1)

① $\epsilon\text{-}c(q_0) = \{q_0, q_1, q_4\}$

② $\epsilon\text{-}c(q_1) = \{q_1\}$

③ $\epsilon\text{-}c(q_2) = \{q_2\}$

④ $\epsilon\text{-}c(q_3) = \{q_3, q_4, q_1\}$

⑤ $\epsilon\text{-}c(q_4) = \{q_1, q_4\}$

$T = \{q_2\}$

2) ⑥ $\delta(①, a) = \{q_3, q_2\}$

⑦ $\delta(②, b) = \{q_1\}$

⑧ $\delta(②, a) = \{q_2\}$

⑨ $\delta(②, b) = \emptyset$

⑩ $\delta(③, a) = \emptyset$

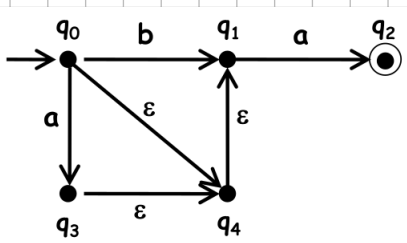
⑪ $\delta(③, b) = \emptyset$

⑫ $\delta(④, a) = \{q_2\}$

⑬ $\delta(④, b) = \emptyset$

⑭ $\delta(⑤, a) = \{q_2\}$

⑮ $\delta(⑤, b) = \emptyset$



3)

q_0, a $\epsilon\text{-}c(⑥) = \{q_3, q_2, q_4, q_1\}$ q_0, b $\epsilon\text{-}c(10) = \emptyset$

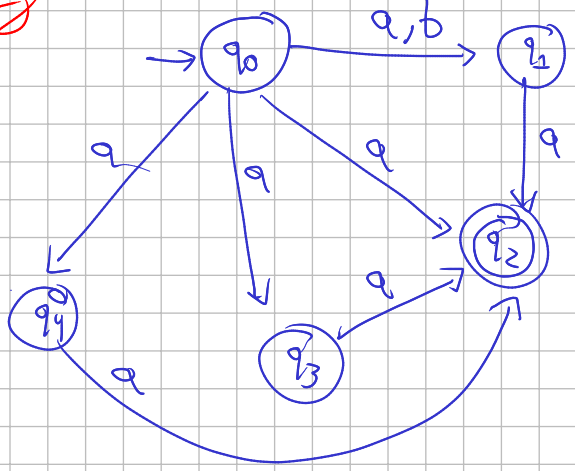
q_1, b $\epsilon\text{-}c(⑦) = \{q_1\}$ q_2, b $\epsilon\text{-}c(11) = \emptyset$

q_1, a $\epsilon\text{-}c(⑧) = \{q_2\}$ q_3, a $\epsilon\text{-}c(12) = \{q_2\}$

q_1, b $\epsilon\text{-}c(9) = \emptyset$ q_3, b $\epsilon\text{-}c(13) = \emptyset$

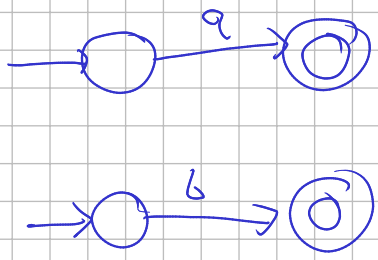
q_4, a $\epsilon\text{-}c(14) = \{q_2\}$

q_4, b $\epsilon\text{-}c(15) = \emptyset$

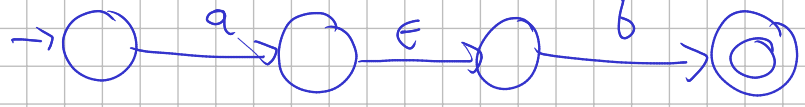


AFN

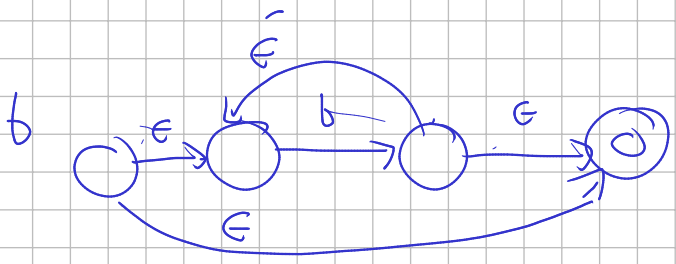
$ab \cup b^*$



ab

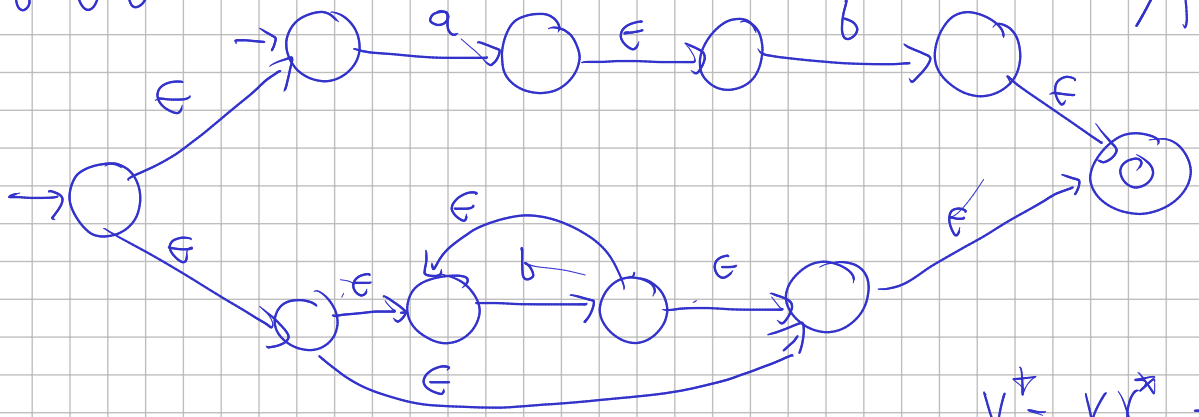


b



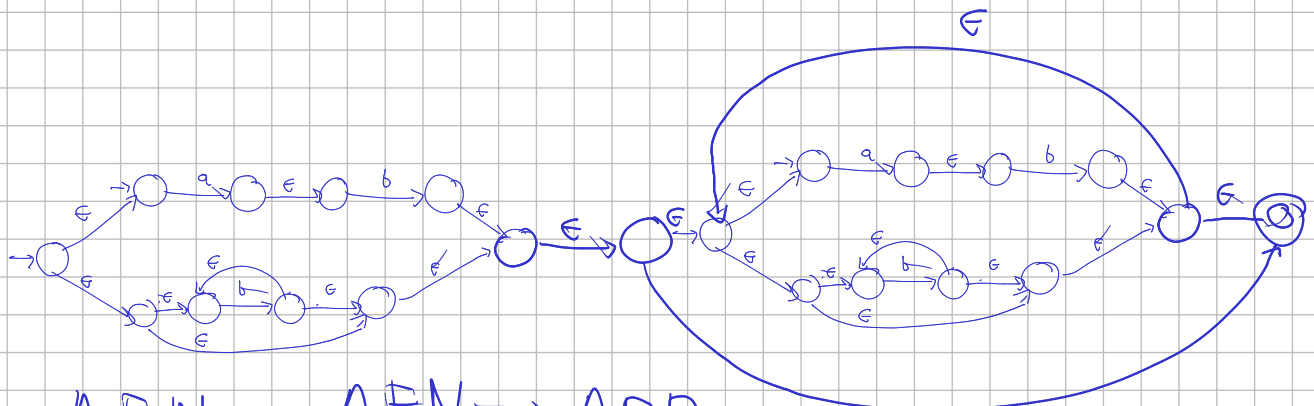
$ab \cup b^*$

AFN$_\varepsilon$



$V^* = VV^* = V^*V$

$(ab \cup b)^+ = (ab \cup b^*)(ab \cup b)^*$



AFN$_\varepsilon$ $\longrightarrow$ AFN $\longrightarrow$ APD

$O(n)$ $\quad$ $O(2^n)$