I Language specification

II RE $\rightarrow (ab \cup ba)^*$

III Apply the guidelines and ~~go~~ convert to NDFA ~~for~~ with null states

IV Convert the NDFA with 'ϵ' transition to DFA

~~state mi~~ minimization → DFA with minimized states

(lesser computation)

↑ maintainability

$$E(q) \rightarrow \{\underline{\qquad\qquad}\}_{m \in k} \quad q_1 \in k \qquad \equiv (q)^{x\,\exists} \xrightarrow{e} x$$

Two states q_i, q_1 are equivalent in DFA, from either state precisely the same strings are accepted

$$\delta(q_i, x) \cong q_1 \xrightarrow{x}$$

$$\delta(q_1, a) \rightarrow k \quad a \in \Sigma$$

$$q_1 \xrightarrow{a} k$$

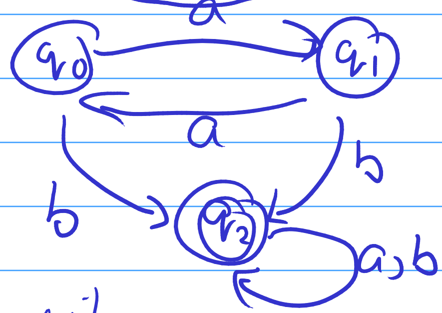
$$q_1 \equiv q_j \qquad \delta(q_i, x) \quad \delta(q_j, x)$$

$$\hookrightarrow \boxed{x \in \Sigma^*} \lrcorner$$

Two states q_i q_j are k-equivalent iff $k \geq 0$ $q_i \equiv q_j$ and length of strings in Σ ~~x~~ $= k$ q_i & q_j should end up both in either final or nonfinal state

i.e. BOTH Accept or both reject

0-equivalent {either both states are final or both are nonfinal}



$\Pi_0 = \{\underbrace{\{q_0, q_1\}}_{\text{nonfinal}}, \underbrace{\{q_2\}}_{\text{final}}\}$

$\Pi_1 = \{\{q_0, q_1\}, \{q_2\}\}$

$q_0 \xrightarrow{a} q_1$ $\quad$ $q_0 \xrightarrow{b} q_2$

$q_1 \xrightarrow{a} q_0$ $\quad$ $q_1 \xrightarrow{b} q_2$

partition the set into zero equiv and use it for next equivalence

q_2 is only equivalent to itself, and is part of partition to maintain a set