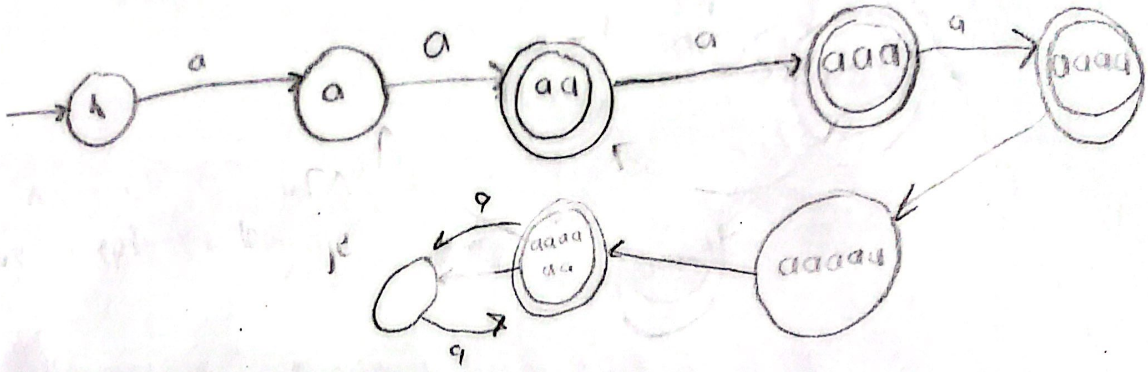
Aceptadores Finitos No Deterministas

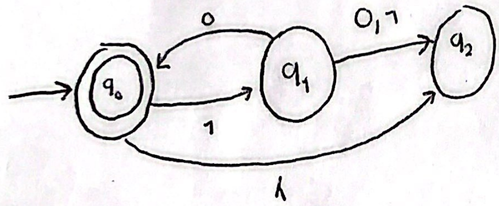
② Find a dfa that acepts the language defined by the nfa in figure 2.8

Lenguaje

$\{aaa, (aa)^n, n>0\}$



④ In Figure 2.9, find $\delta^*(q_0,1011)$ and $\delta^*(q_1,01)$



a) $(q_0,1011) = \{q_0, q_1, q_2\}$

$q_0 \xrightarrow{1} q_1 \xrightarrow{0} q_2 \xrightarrow{1} \emptyset$

λ : $q_2 \xrightarrow{1} \emptyset$

0 : $q_0 \xrightarrow{1} q_1 \xrightarrow{1} q_2$

λ : $q_2 \rightarrow \emptyset$

b) $(q_1, 01) = \{q_1\}$

$q_1 \xrightarrow{0} q_0 \xrightarrow{1} q_1$ ✓

λ

⑤ In Figure 2.10, find $\delta^*(q_0,a)$ and $\delta^*(q_1,\lambda)$

a) $\delta^*(q_0,a) = \{q_0, q_1, q_2\}$

$q_0 \xrightarrow{a} q_1$

λ : q_2

λ : q_0

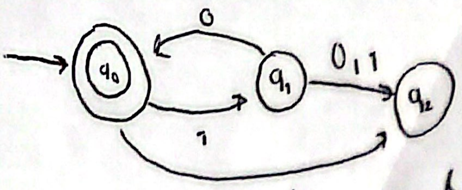
b) $(q_1,\lambda) = \{q_0, q_1, q_2\}$

q_1

λ : q_2

λ : q_0

⑥ For the nfa in figure 2.9, find $\delta^*(q_0, 1010)$ and $\delta^*(q_1, 00)$



a) $\delta^*(q_0, 1010) = \{q_0, q_1, q_2\}$

$q_0 \xrightarrow{1} q_1 \xrightarrow{0} q_2 \xrightarrow{1} \emptyset$

$q_0 \overset{\lambda}{\dashrightarrow} q_2 \xrightarrow{1} \emptyset$

$q_1 \overset{0}{\to} q_0 \xrightarrow{1} q_1 \xrightarrow{0} q_2$

$q_0 \overset{\lambda}{\dashrightarrow} q_2 \xrightarrow{1} \emptyset$

$q_1 \overset{0}{\dashrightarrow} q_0 \overset{\lambda}{\dashrightarrow} q_2$

b) $\delta^*(q_1, 00) = \{\ \}$

$q_1 \xrightarrow{0} q_2 \xrightarrow{0} \emptyset$

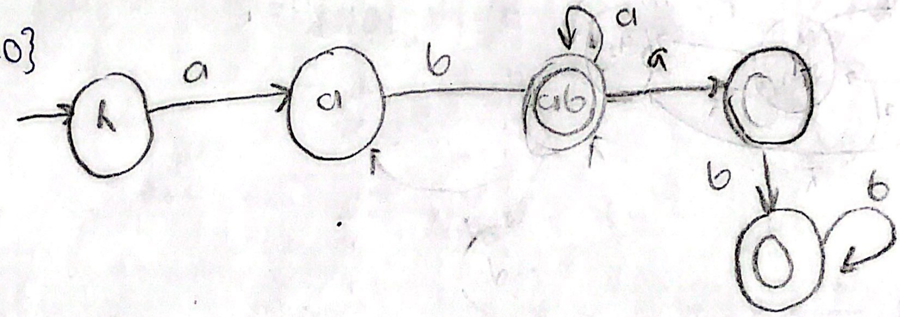
$q_1 \overset{0}{\dashrightarrow} q_0 \xrightarrow{0} \emptyset$

$q_0 \overset{\lambda}{\dashrightarrow} q_2 \xrightarrow{0} \emptyset$

⑦ Design an nfa with no more than five states for the set $\{abab^n : n > 0\} \cup \{aba^n : n \geq 0\}$

abab, ababb …

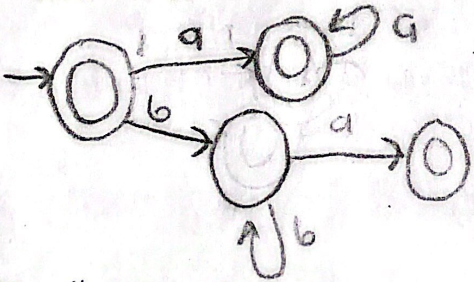
ab, aba, abaa



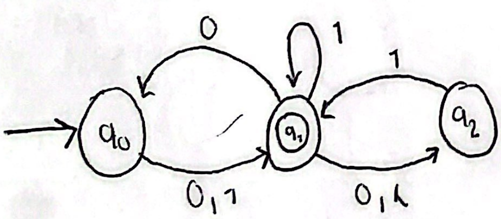
⑪ Find an nfa with four states for $L = \{a^n : n \geq 0\} \cup \{b^n a : n \geq 1\}$

$\{\lambda, a, aa \ldots\}$

$\{ba, bba, \ldots\}$



⑫ Which of the strings, 00, 01001, 10010, 000, 0000 are accepted by the following nfa?

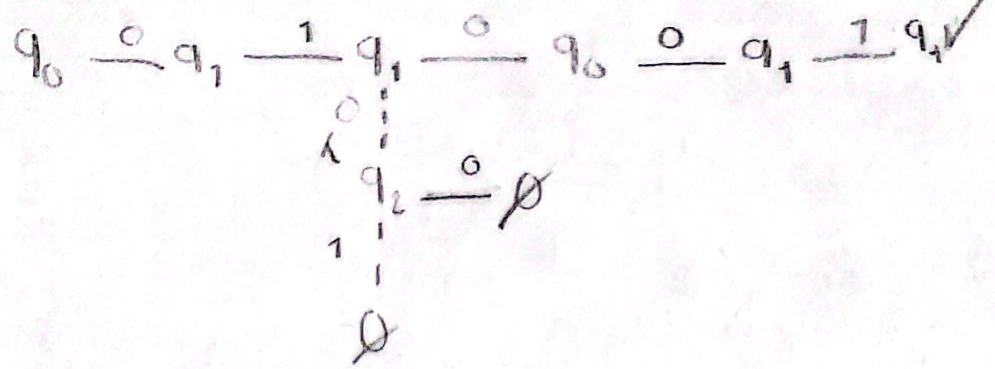


a) 00 ✗

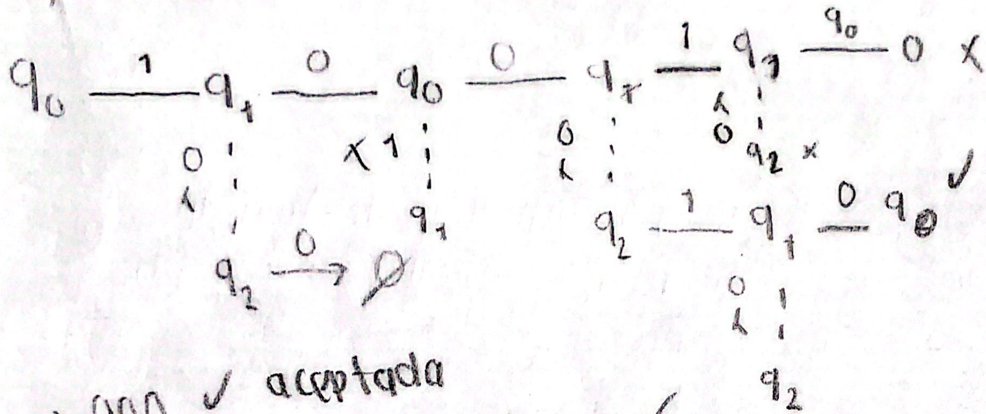
$q_0 \xrightarrow{0} q_1 \xrightarrow{0} q_2$

$q_1 \overset{0}{\dashrightarrow} q_0$

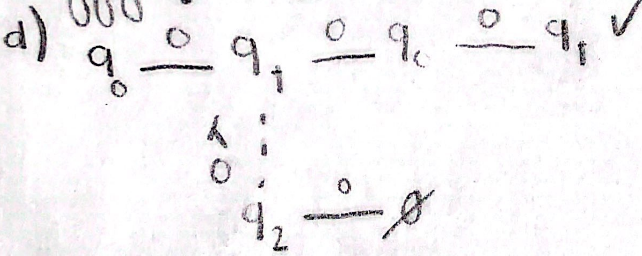
b) 01001 ✓ aceptada



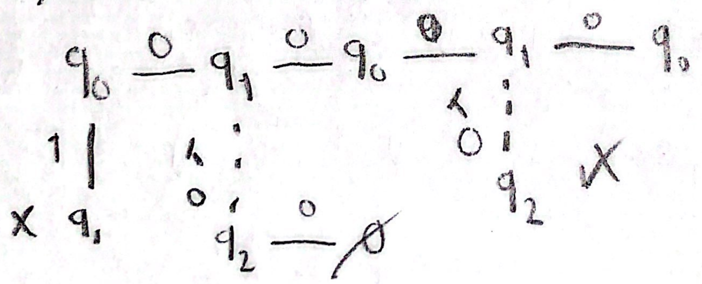
c) 10010 ✗



d) 000 ✓ aceptada

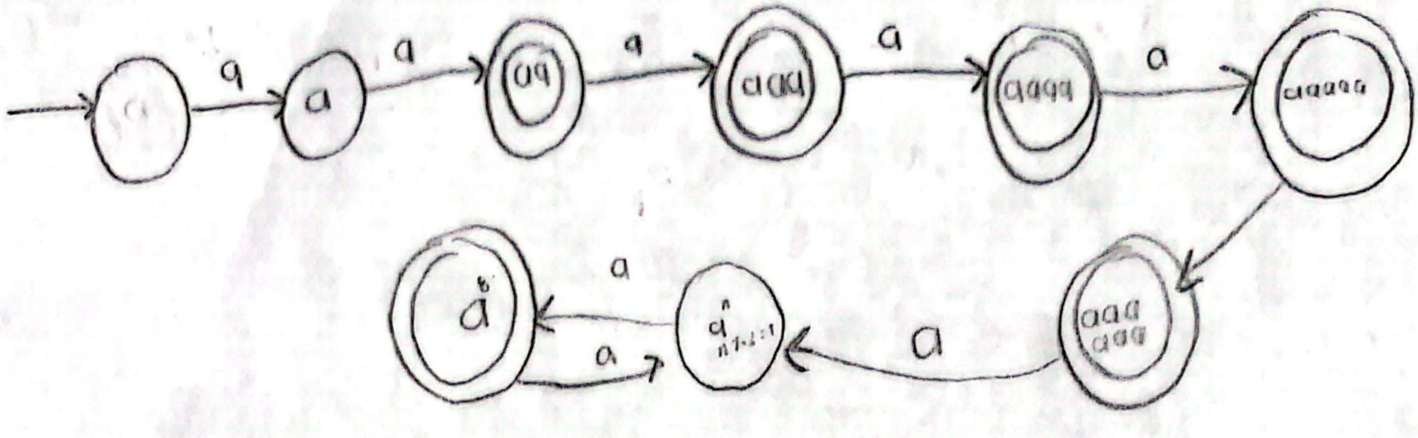


d) 0000 ✗

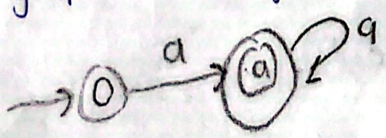


(14) Let L be the language accepted by the nfa in figure 2.8. Find an nfa accepting $L \cup \{a^5\}$

$L = \{a^n : n > 0, n$ es par $o\ n = 3\} \cup \{a^5$



(16) Find an nfa that accepts $\{a\}^*$ and is such that if in its transition graph a single edge is removed, the resulting automaton accepts $\{a\}$



(27) An nfa in which

a) there's no λ-transitions

b) for all $q \in Q$ and all $a \in \Sigma$, $\delta(q,a)$ contains at most 1 element is sometimes called an incomplete dfa. This is reasonable since the conditions make it such that there is any choices or move.

For $\Sigma = \{a,b\}$, convert the incomplete dfa into a standard dfa