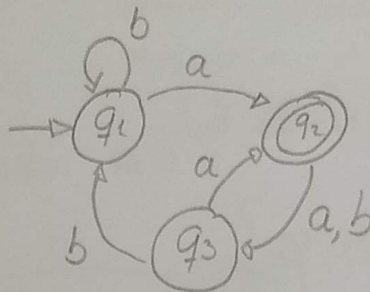


LISTA 01 - AUTÔMATOS FINITOS DETERMINÍSTICOS

1.1 DEFINIÇÃO FORMAL

$$M_1 = (Q, \Sigma, \delta, q_0, F)$$



$$Q = \{q_1, q_2, q_3\}$$

$$\Sigma = \{a, b\}$$

$$\delta = Q \times \Sigma$$

$$q_0 = q_1$$

$$F = \{q_2\}$$

	a	b
q ₁	q ₂	q ₁
q ₂	q ₃	q ₃
q ₃	q ₂	q ₁

a) QUAL ESTADO INICIAL?

R: q₁

b) QUAL CONJUNTO DE ESTADOS DE ACEITAÇÃO?

R: F = {q₂}

c) SEQUÊNCIA DE ESTADOS PARA ENTRADA aabb?

Estado Inicial	q ₁
a	q ₂
a	q ₃
b	q ₁
b	q ₁

d) MÁQUINA ACEITA "aabb"?

R: NÃO

e) MÁQUINA ACEITA "aabb" E?

R: NÃO



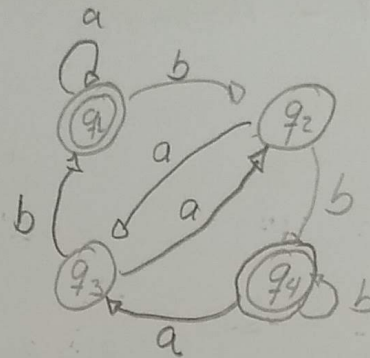
1.5 Definição Formal

$$M_2 = (Q, \Sigma, \delta, q_0, F)$$

$$Q = \{q_1, q_2, q_3, q_4\}$$

$$\Sigma = \{a, b\}$$

$$\delta = Q \times \Sigma$$



$$q_0 = q_1$$

$$F = \{q_1, q_4\}$$

	a	b
q ₁	q ₁	q ₂
q ₂	q ₃	q ₄
q ₃	q ₂	q ₁
q ₄	q ₃	q ₄

a) QUAL ESTADO INICIAL?

R: q₁

b) QUAL CONJUNTO DE ESTADOS DE ACEITAÇÃO?

R: F = {q₁, q₄}

c) ESTADOS PARA ENTRADA aabb

ESTADO INICIAL q₁

a q₁

a q₁

b q₂

b q₄

d) A MÁQUINA ACEITA A CADA 'aabb'?

R: Sim

e) A MÁQUINA ACEITA A CADA ε?

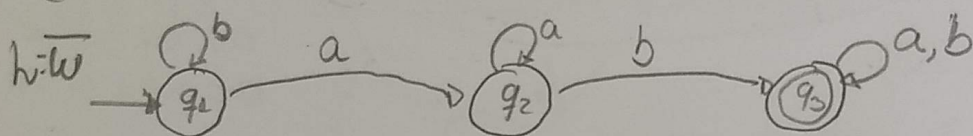
R: Sim

1.5

$$\Sigma = \{a, b\}$$

(a) $\{w \mid w \text{ N\AA O CONT\AA M A SUBCADA A } ab\}$

$\{\bar{w} \mid \bar{w} \text{ CONT\AA M A SUBCADA A } ab\}$

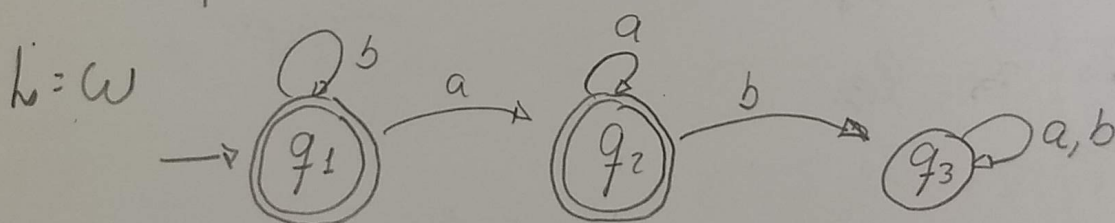


$$Q = \{q_1, q_2, q_3\} \quad q_0 = q_1$$

$$\delta = Q \times \Sigma$$

$$F = \{q_3\}$$

	a	b
q_1	q_2	q_1
q_2	q_2	q_3
q_3	q_3	q_3



$$Q = \{q_1, q_2, q_3\}$$

$$q_0 = q_1$$

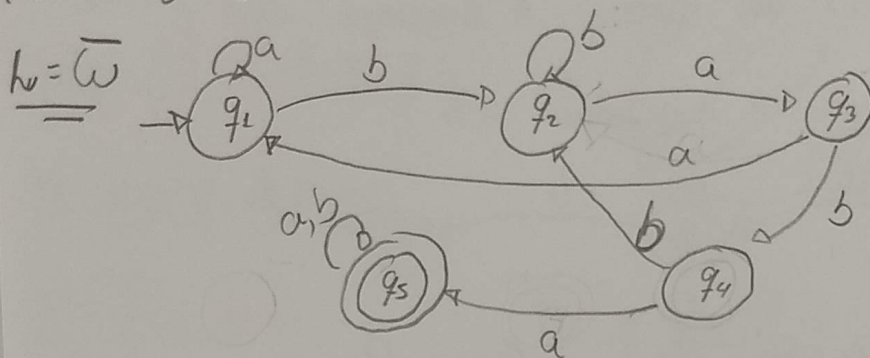
$$\delta = Q \times \Sigma$$

$$F = \{q_1, q_2\}$$

	a	b
q_1	q_2	q_1
q_2	q_2	q_3
q_3	q_3	q_3



(b) $\{w \mid w \text{ N\AA O C\O N T\O E M A SUBCADA\O BABA}\}$



b a b a OK
 a b a b a N
 a a b a b b N
 b a b a a OK

$$Q = \{q_1, q_2, q_3, q_4, q_5\}$$

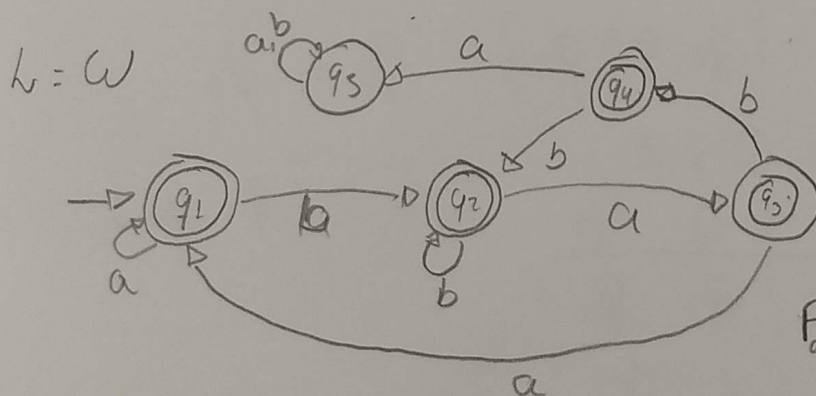
$$q_0 = q_1$$

$$\Sigma = \{a, b\}$$

$$F_{\bar{w}} = \{q_5\}$$

$$\delta = Q \times \Sigma$$

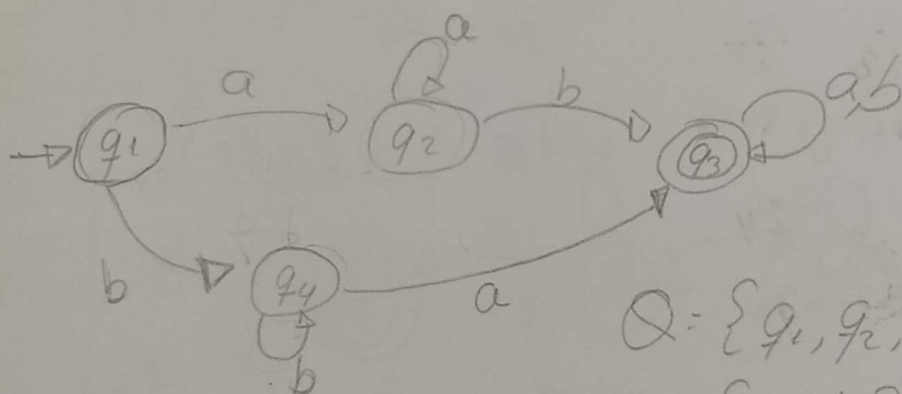
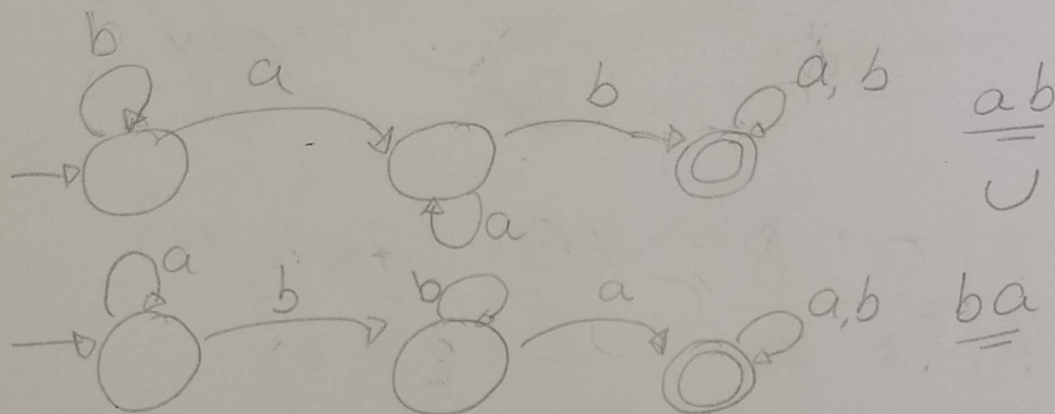
	a	b
q ₁	q ₁	q ₂
q ₂	q ₃	q ₂
q ₃	q ₁	q ₄
q ₄	q ₅	q ₂
q ₅	q ₅	q ₅



$$F_w = \{q_1, q_2, q_3, q_4\}$$

(C) $\{ \omega \mid \omega \text{ NÃO CONTÉM nem a subcadeia 'ab' nem 'ba' } \}$

$L = \overline{\omega} \mid \overline{\omega} \text{ CONTÉM subcadeia 'ab' ou 'ba'}$



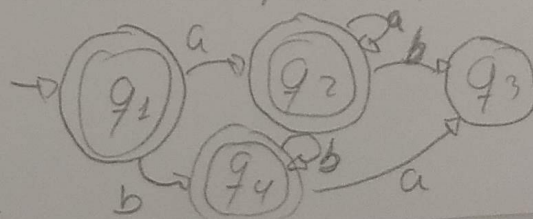
$Q = \{q_1, q_2, q_3, q_4\}$

$\Sigma = \{a, b\}$

$q_0 = q_1$

$F_{\overline{\omega}} = \{q_3\}$

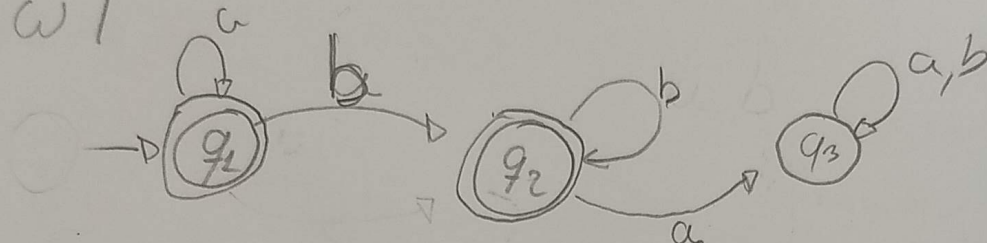
$F_{\omega} = \{q_1, q_2, q_3\}$



δ	a	b
q_1	q_2	q_4
q_2	q_2	q_3
q_3	q_3	q_3
q_4	q_3	q_4

(d) $\{w \mid w \text{ é qualquer cadeia que não está em } a^* b^*\}$

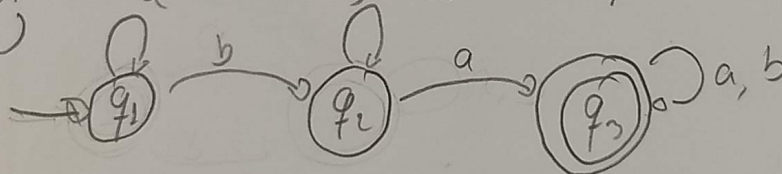
$L = \bar{w}$



δ	a	b
q1	q1	q2

	a	b
q2	q3	q2
q3	q3	q3

$L = w$



$Q = \{q_1, q_2, q_3\}$

$\Sigma = \{a, b\}$

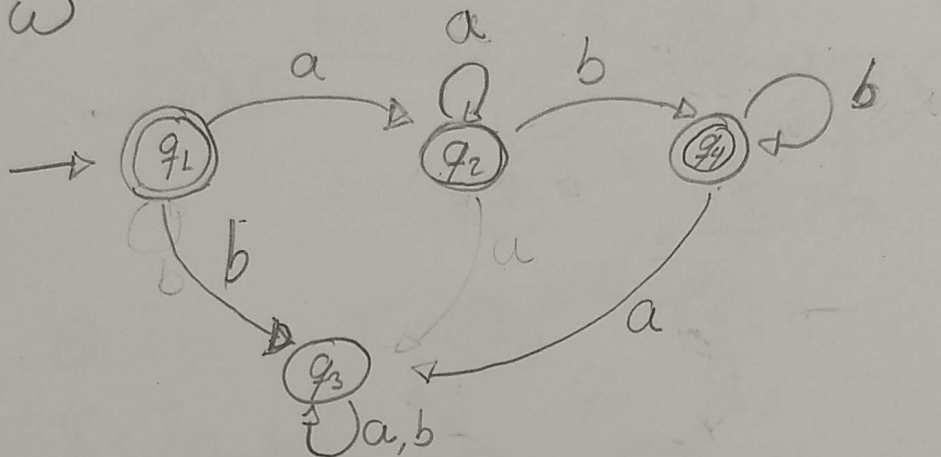
$q_0 = q_1$

$F_{\bar{w}} = \{q_1, q_2\}$

$F_w = \{q_3\}$

(c) $\omega \mid \omega$ é QUALQUER CADEIA QUE NÃO ESTÁ em $(ab^+)^*$

$$L = \overline{\omega}$$



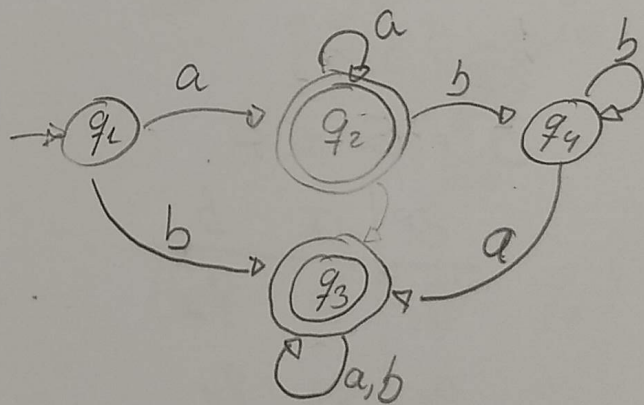
$$Q = \{q_1, q_2, q_3, q_4\}$$

$$q_0 = q_1$$

$$\Sigma = \{a, b\}$$

$$F_{\overline{\omega}} = \{q_2, q_4\}$$

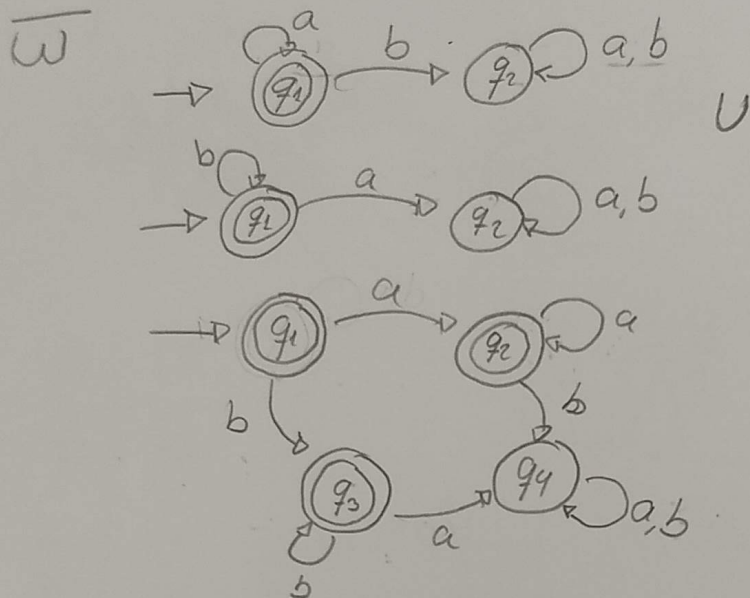
δ	a	b
q_1	q_2	q_3
q_2	q_2	q_4
q_3	q_3	q_3
q_4	q_3	q_4



$$F_{\omega} = \{q_2, q_3\}$$



(f) $\{ \omega \mid \omega \text{ é uma "cadeia" QUE NÃO ESTÁ EM } a^* \cup b^* \}$



$Q = \{ q_1, q_2, q_3, q_4 \}$

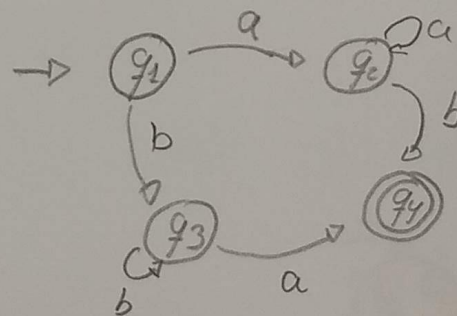
$q_0 = q_1$

$\Sigma = \{ a, b \}$

$F_{\overline{\omega}} = \{ q_2, q_3, q_4 \}$

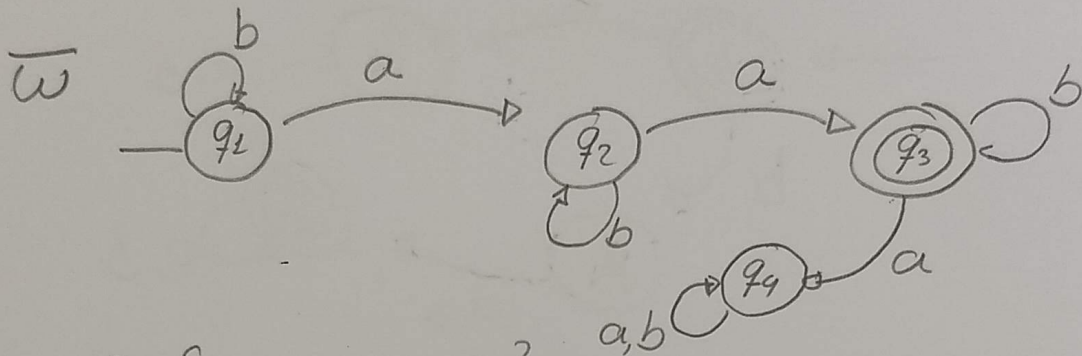
$\delta = Q \times \Sigma$

δ	a	b
q_1	q_2	q_3
q_2	q_2	q_4
q_3	q_4	q_3
q_4	q_4	q_4



$F_{\omega} = \{ q_4 \}$

(g) $\{w \mid w \text{ é qualquer cadeia que não contém exatamente dois 'a's} \}$



$$Q = \{q_1, q_2, q_3, q_4\}$$

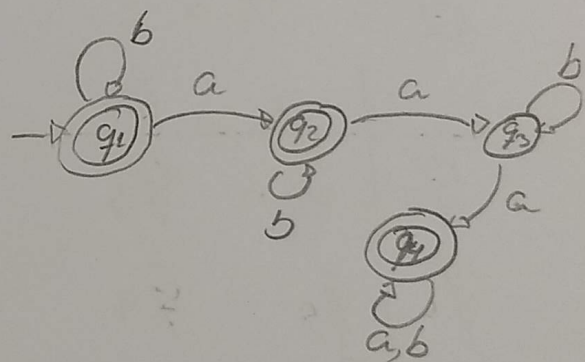
$$\Sigma = \{a, b\}$$

$$\delta = Q \times \Sigma$$

δ	a	b
q_1	q_2	q_1
q_2	q_3	q_2
q_3	q_4	q_3
q_4	q_4	q_4

$$q_0 = q_1$$

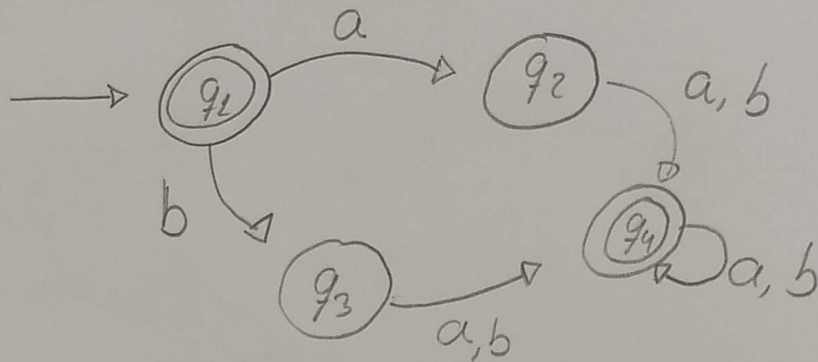
$$F_{\overline{w}} = \{q_3\}$$



$$F_w = \{q_1, q_2, q_4\}$$



(b) $\{w \mid \text{é qualquer cadeia, EXCETO } a \& b\}$



$$Q = \{q_1, q_2, q_3, q_4\}$$

$$\Sigma = \{a, b\}$$

$$\delta = Q \times \Sigma$$

$$q_0 = q_1$$

$$F = \{q_1, q_4\}$$

	a	b
q ₁	q ₂	q ₃
q ₂	q ₄	q ₄
q ₃	q ₄	q ₄
q ₄	q ₄	q ₄