

# FUNDAMENTOS TEÓRICOS DA COMPUTAÇÃO

--- MÁQUINAS DE TURING ---

Exemplo (4)

$a^n b^n c^n$

$$M_4 = \{\omega \in \{a, b, c\}^*: \omega \in a^n b^n c^n, n \geq 1\}$$



Use o arsenal que você tem e seja criativo!

$a^n b^n c^n$

$$L_4 = \{\omega \in \{a, b, c\}^*: \omega \in a^n b^n c^n, n \geq 1\}$$

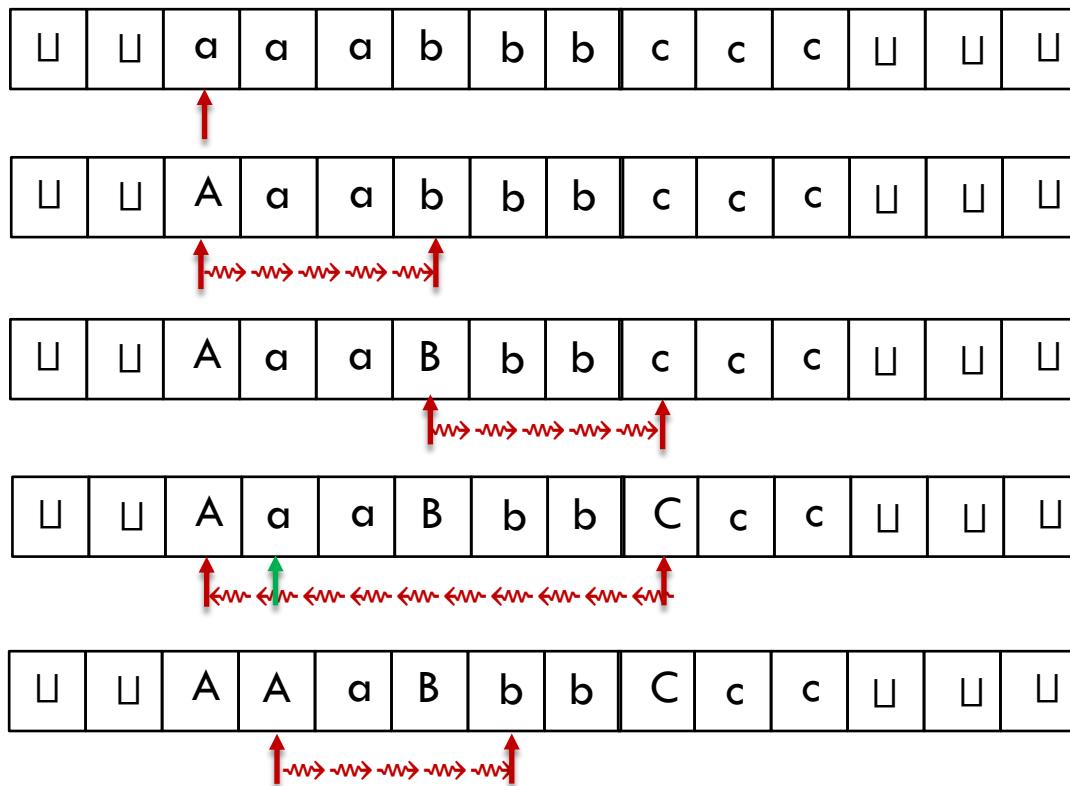
$M_4$  = "Sobre a entrada  $\omega$ :

Varre a fita fazendo as seguintes operações

- Se símbolo atual for igual a "a" troca por "A" e procura "b"
- Se símbolo atual for igual a "b" troca por "B" e procura "c"
- Se símbolo atual for igual a "c" troca por "C"
- Retorna para a esquerda até encontrar um "A"
- Passa para o próximo símbolo à direita
- Se próximo símbolo for diferente de "B" repita o mesmo procedimento
- Senão, vai até o final consumindo somente "B" e "C"

$$a^n b^n c^n$$

$$\omega = aaabbcc \in L_2$$



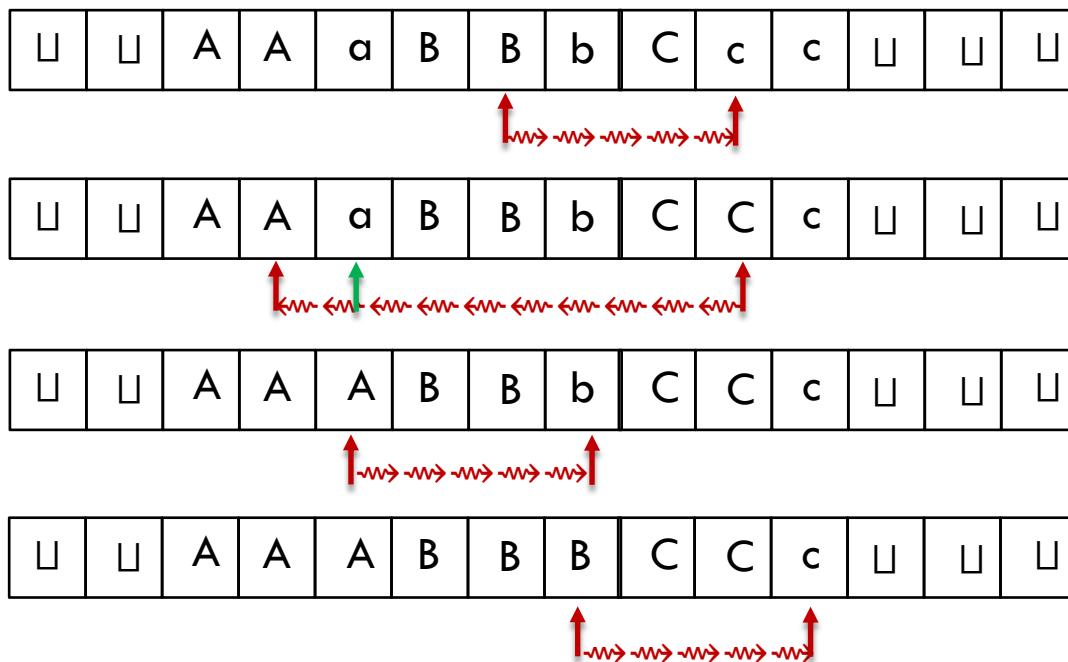
início

Troca “a” por “A”  
e procura “b”

Troca “b” por “B”  
e procura “c”

Troca “c” por “C”,  
retorna até “A” e  
passa para a direita

Troca “a” por “A” e  
procura “b”

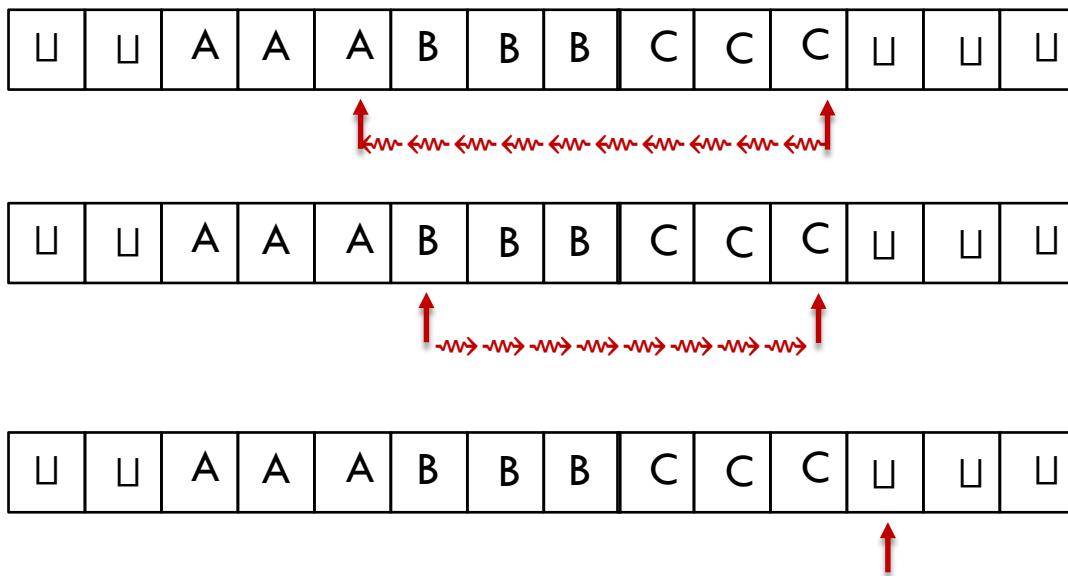
$a^n b^n c^n$  $\omega = aaabbcc \in L_2$ 

Troca “b” por “B”  
e procura “c”

Troca “c” por “C”,  
retorna até “A” e  
passa para a direita

Troca “a” por “A”  
e procura “b”

Troca “b” por “B”  
e procura “c”

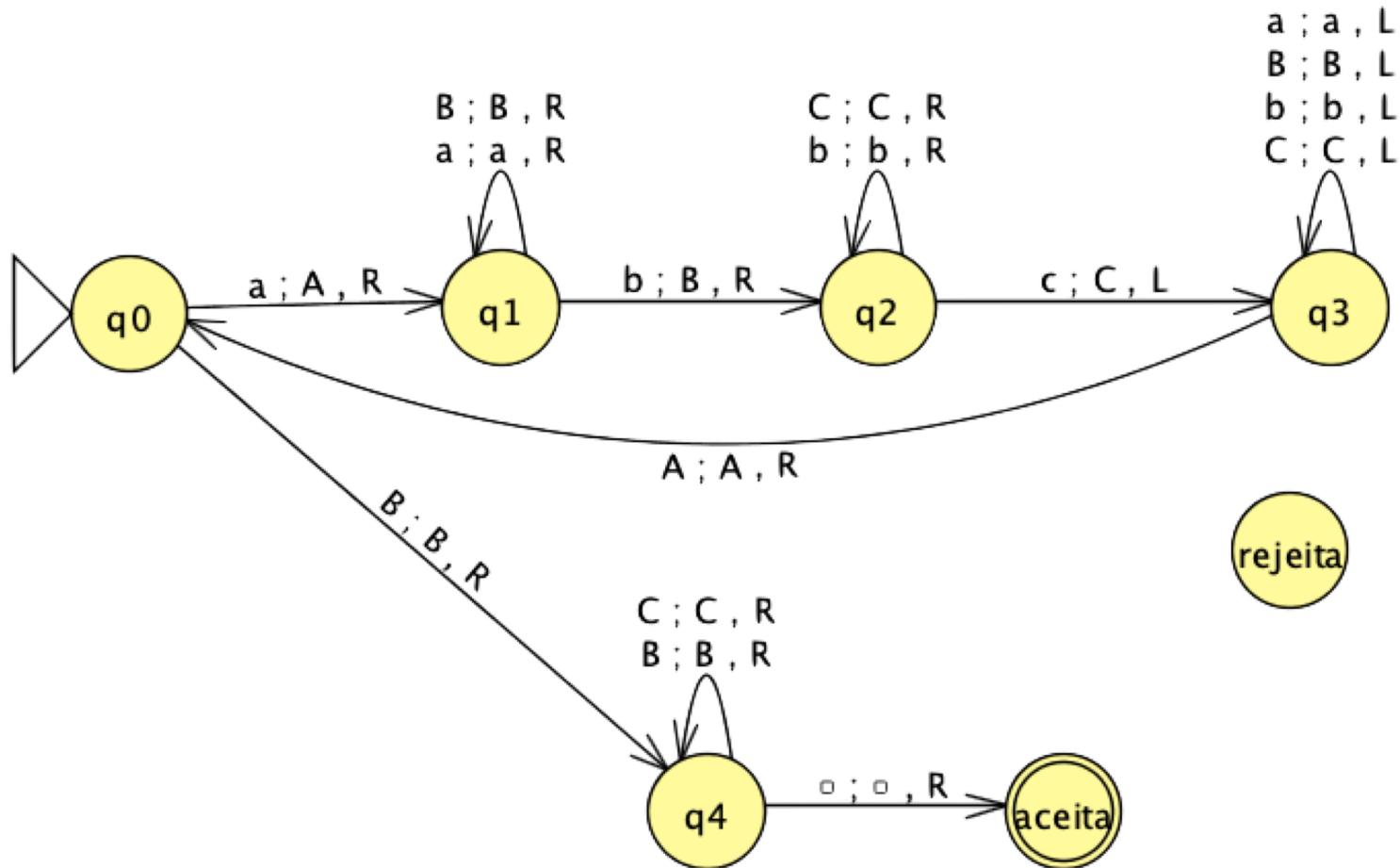
$a^n b^n c^n$  $\omega = aaabbcc \in L_2$ 

Troca “c” por “C”,  
retorna até “A” e  
passa para a direita

Só consome “B” e “C”

Se símbolo for  $\sqcup$   
aceita a cadeia

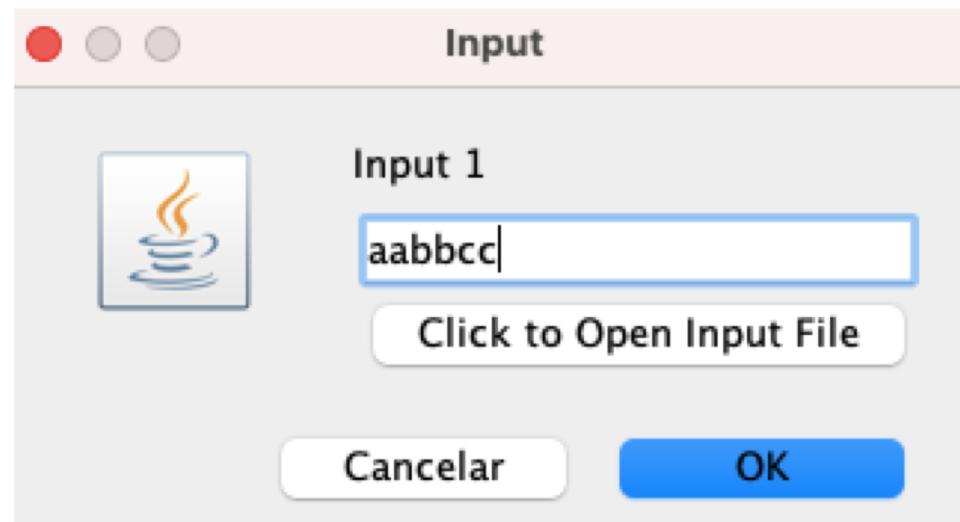
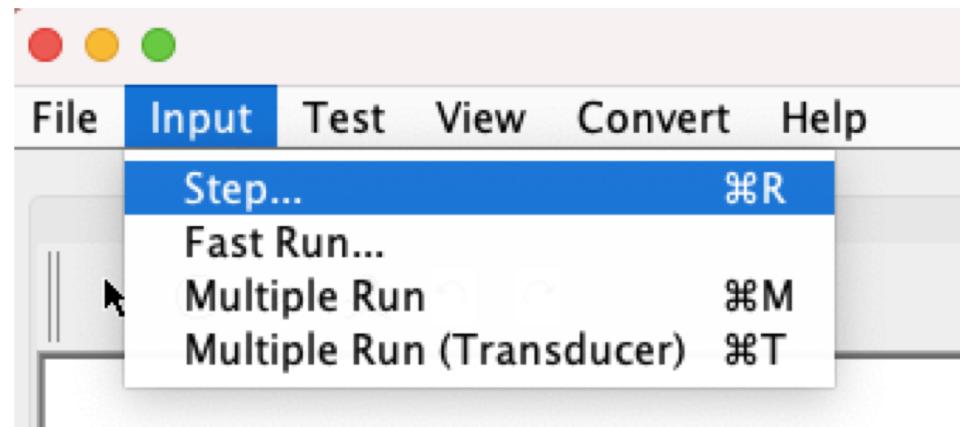
$a^n b^n c^n$

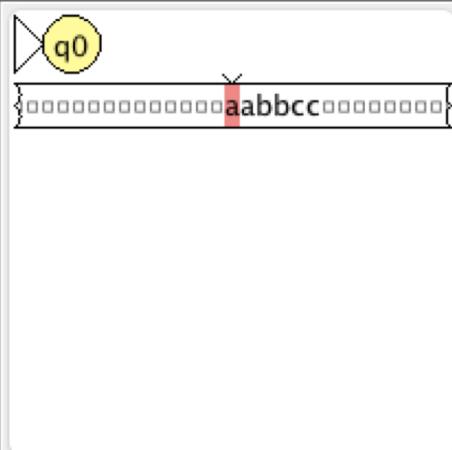
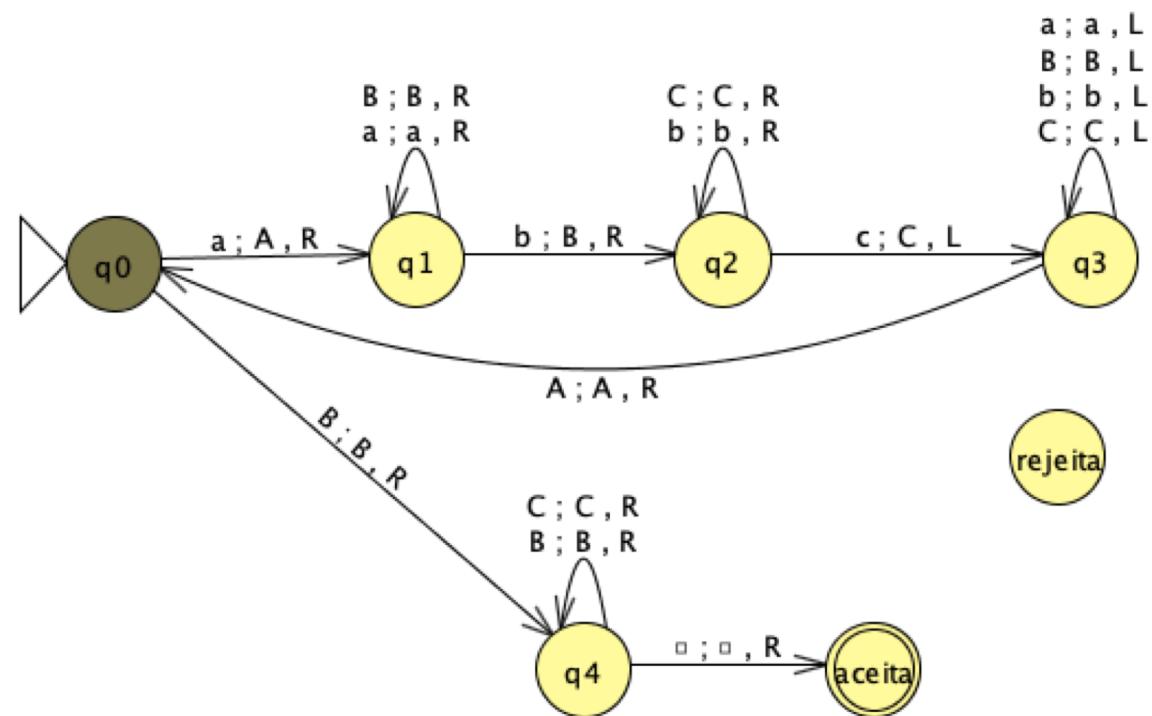


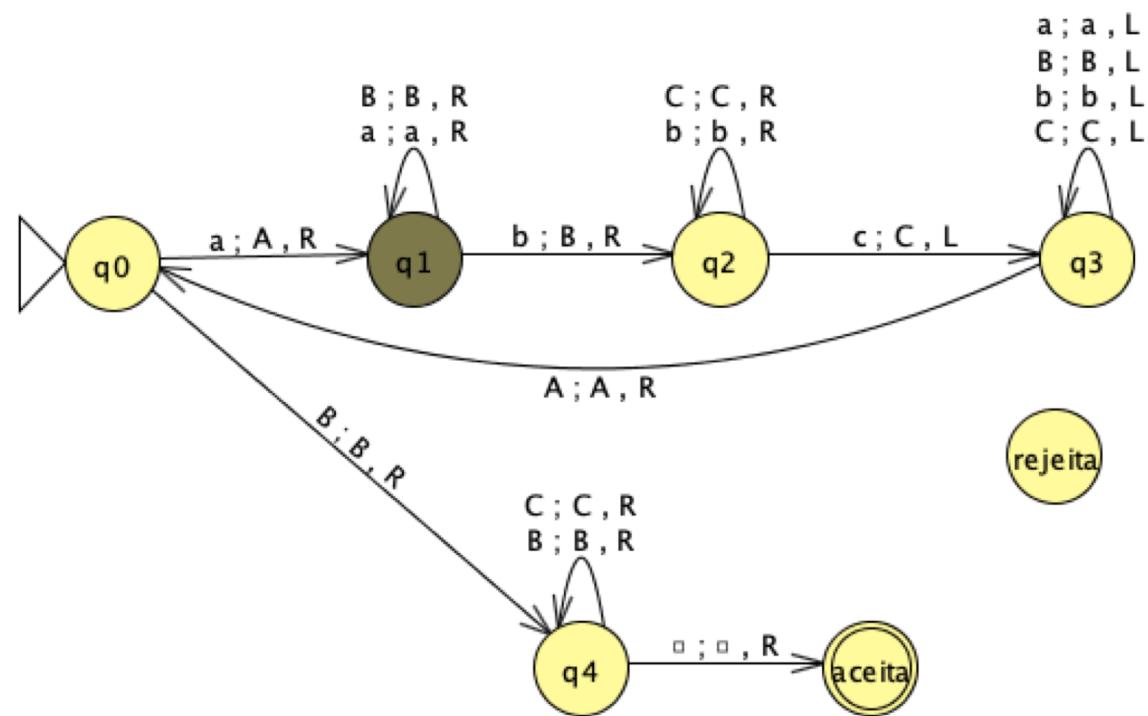
# Simulando aceite

$\omega = aabbcc$

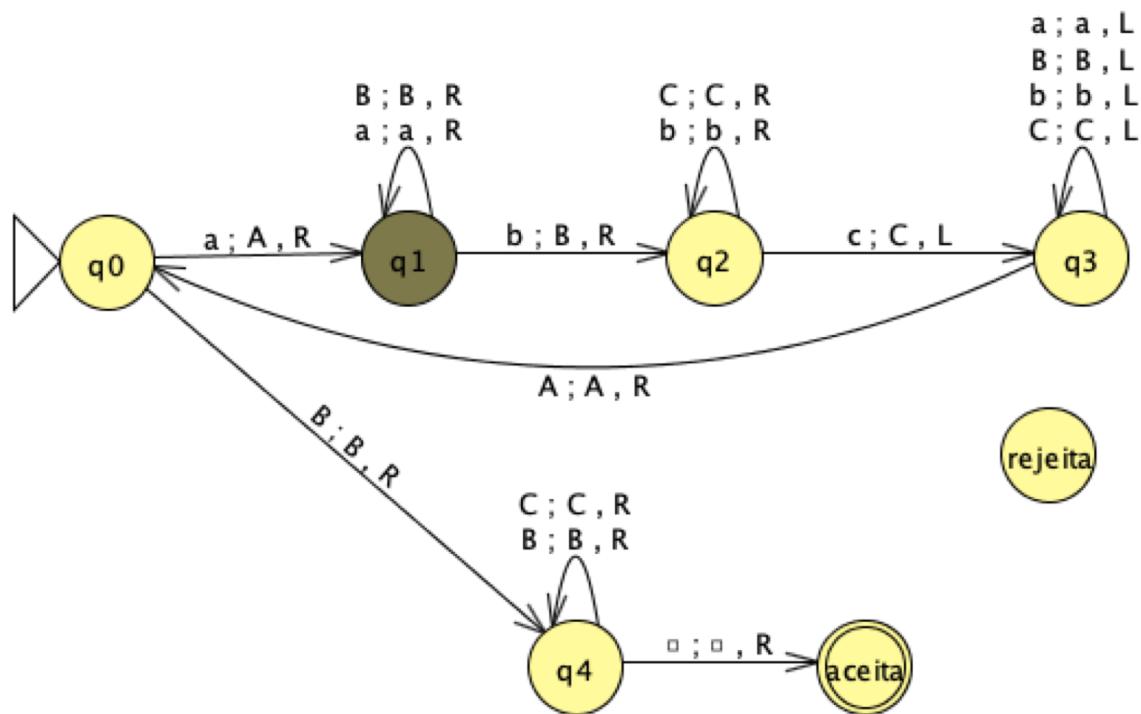
# Início





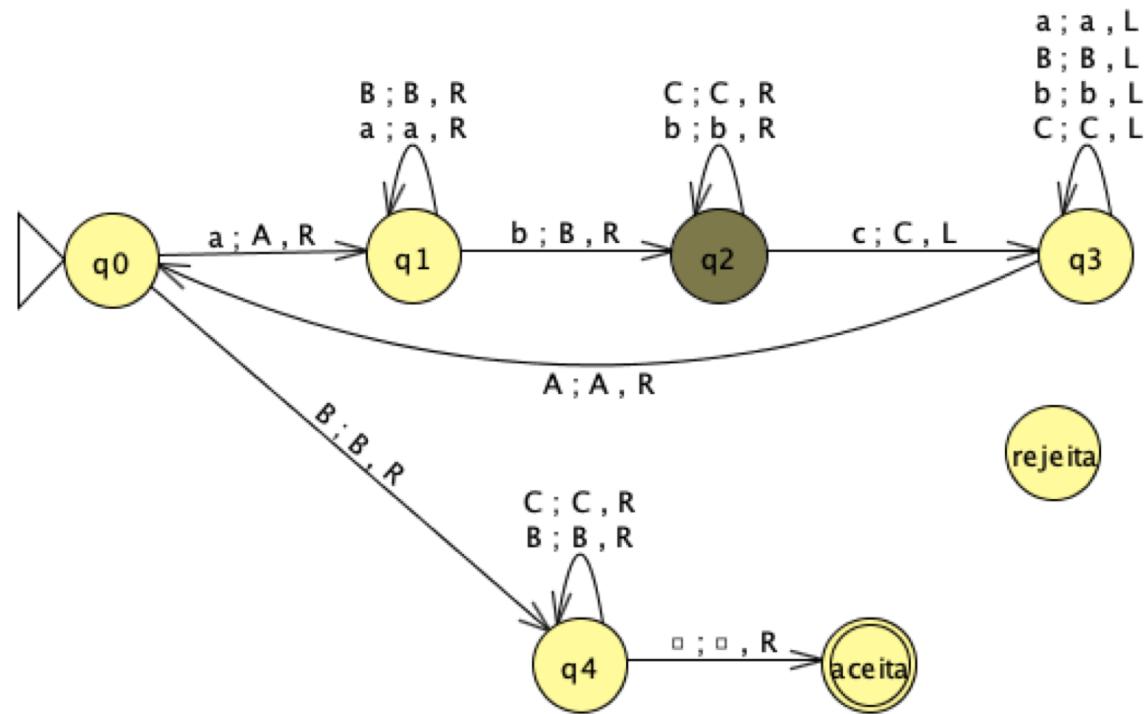


q1  
Aabbcc



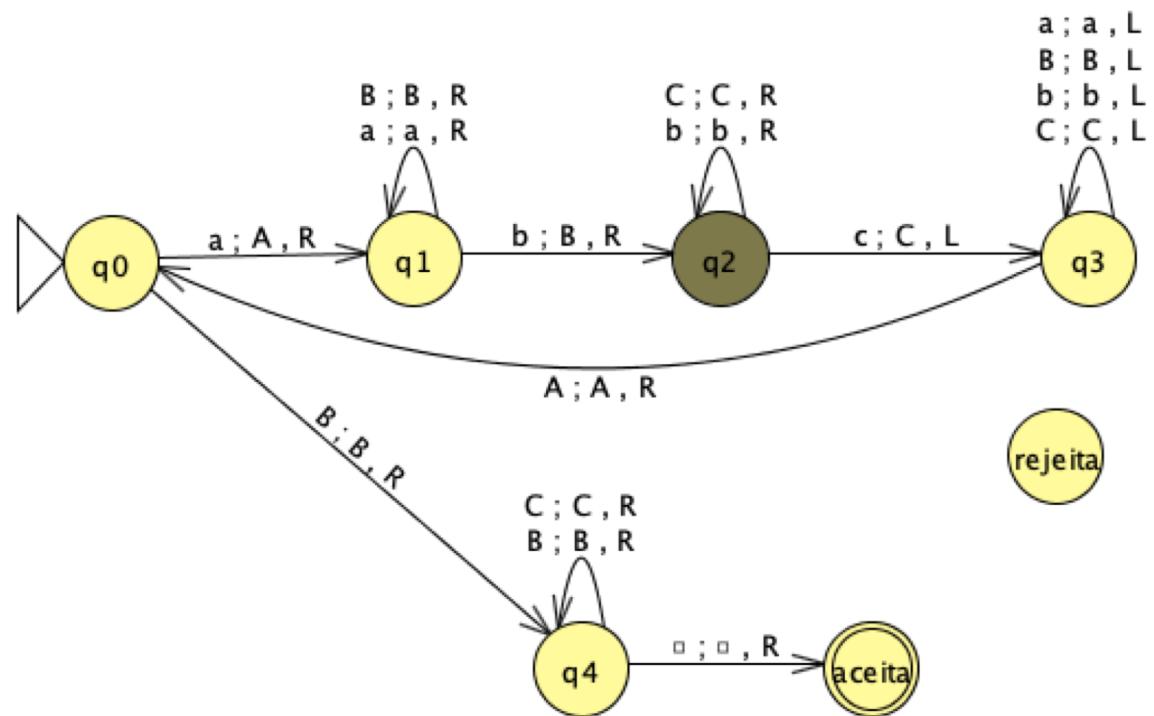
q1

{ooooooooooooAabbccoooooooo}



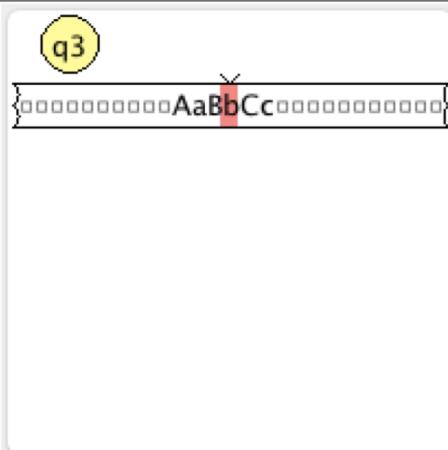
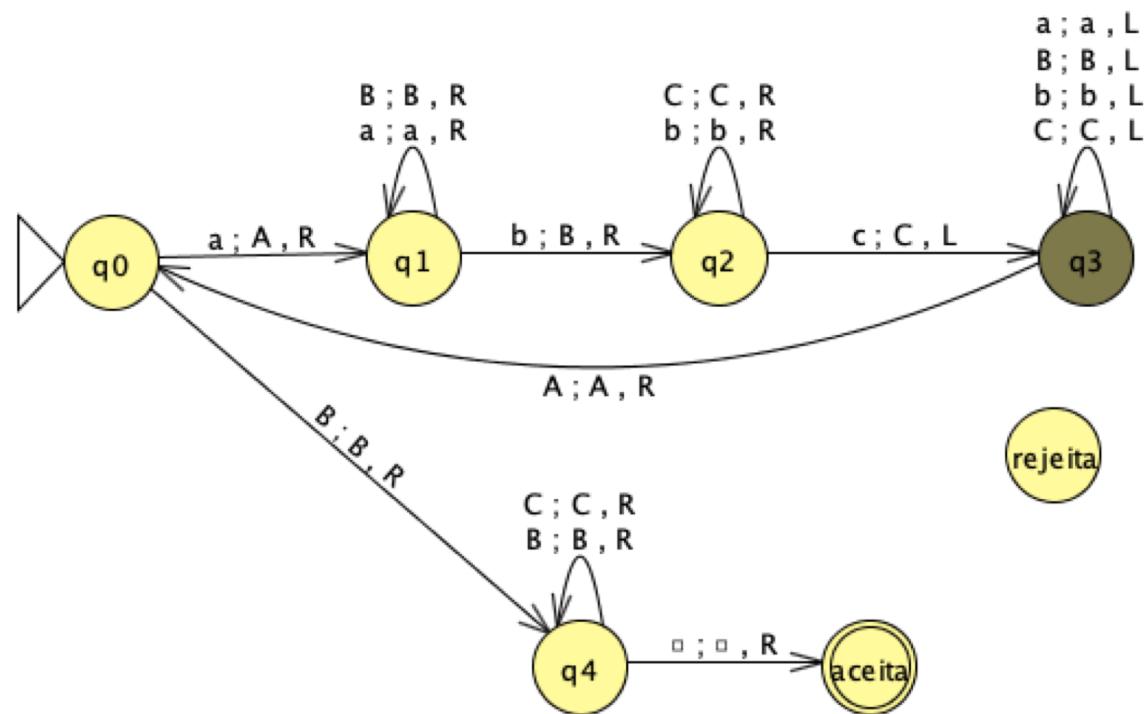
q2

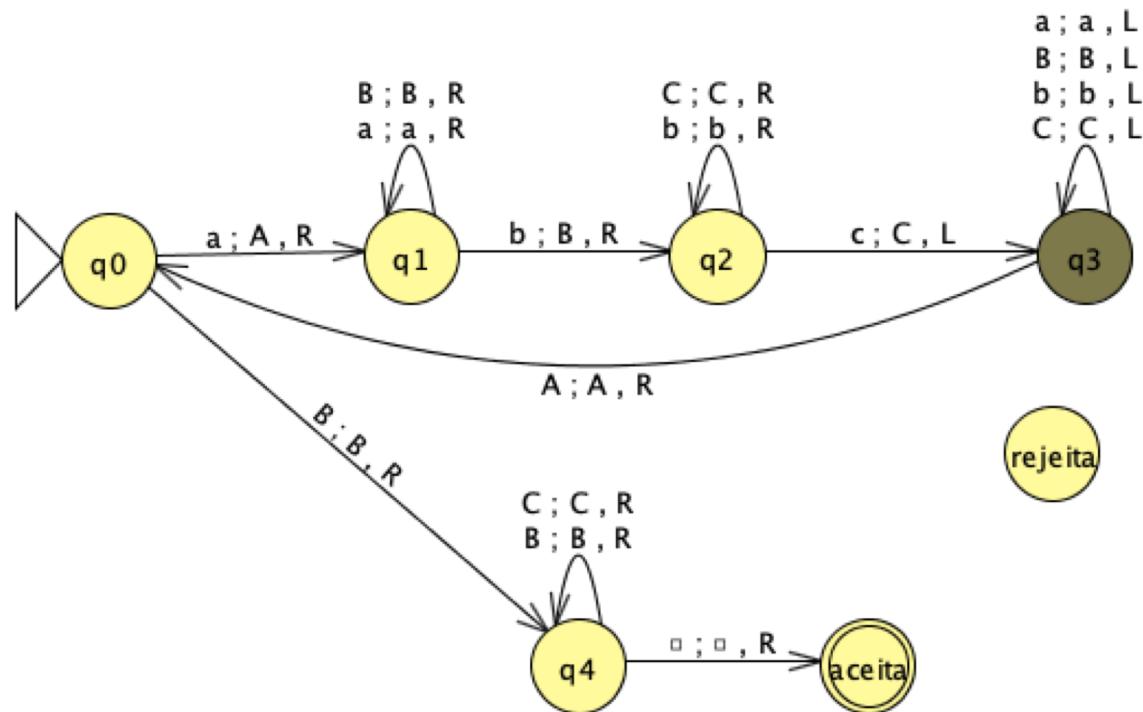
{ AaBbcc }



q2

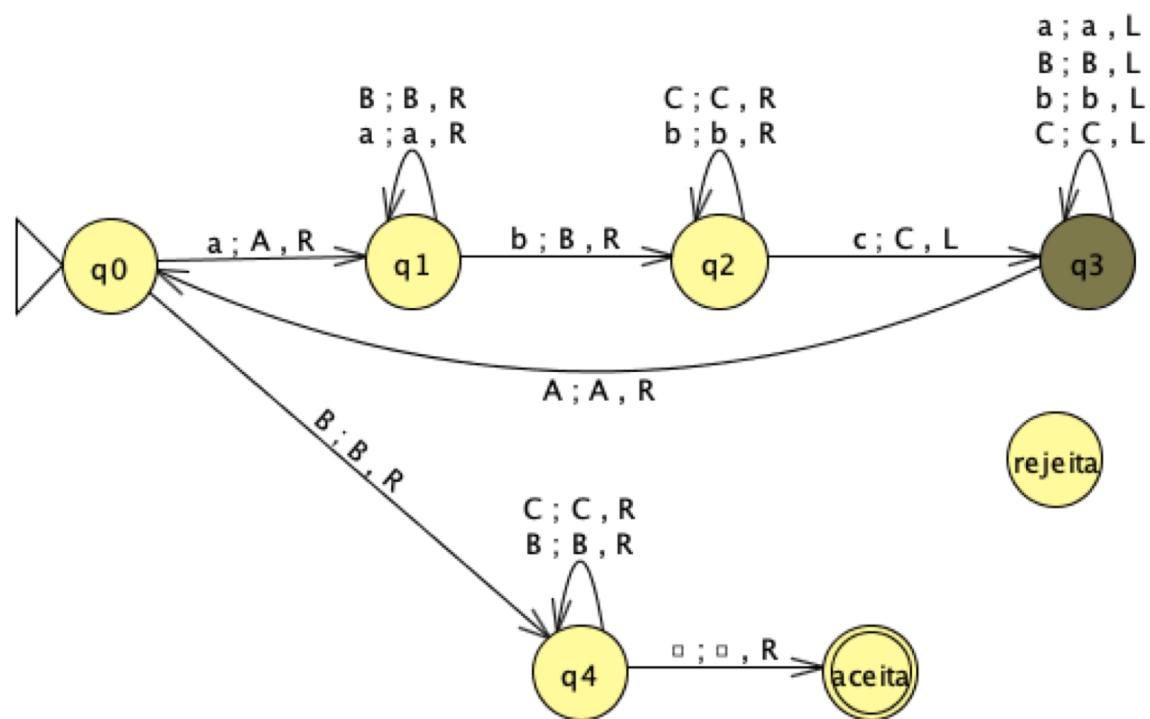
AaBbcc



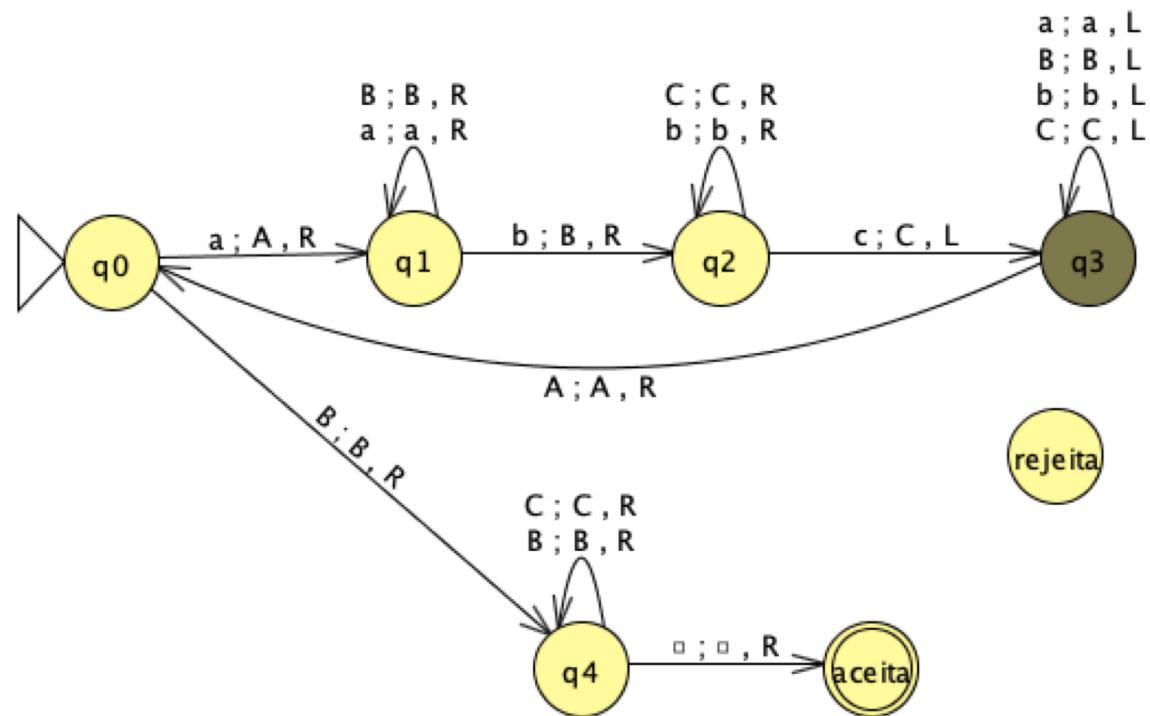


q3

{ooooooooooooAaBbCcoooooooo}

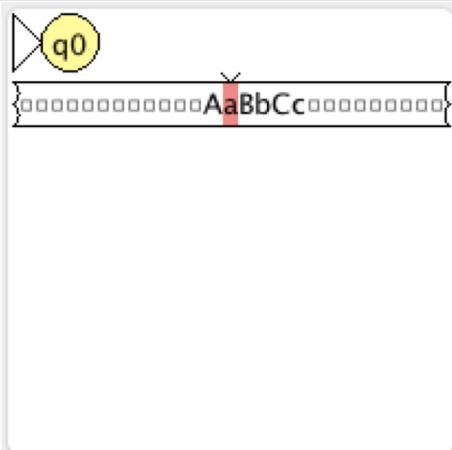
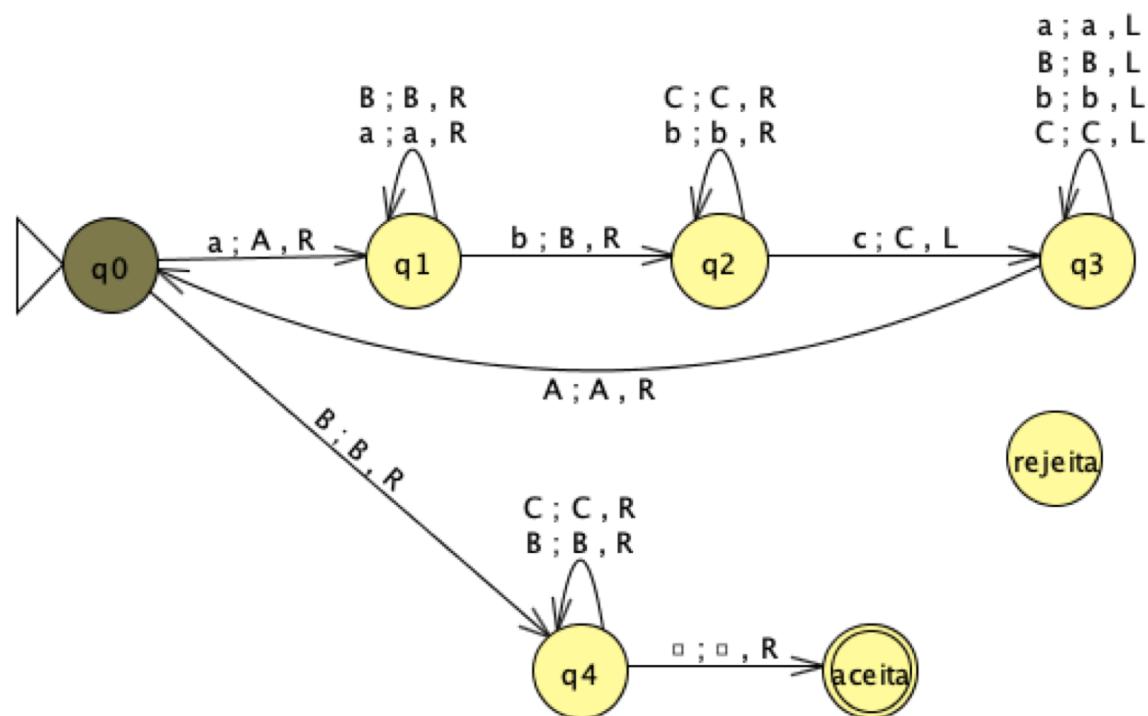


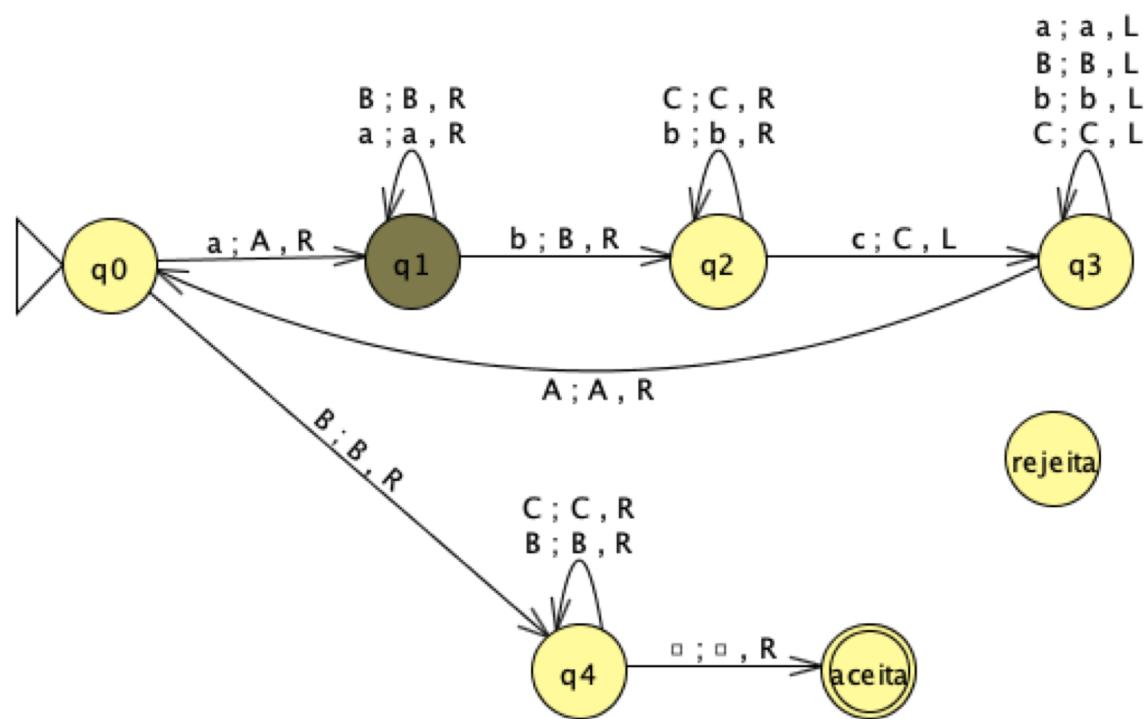
q3  
AaBbCc



q3

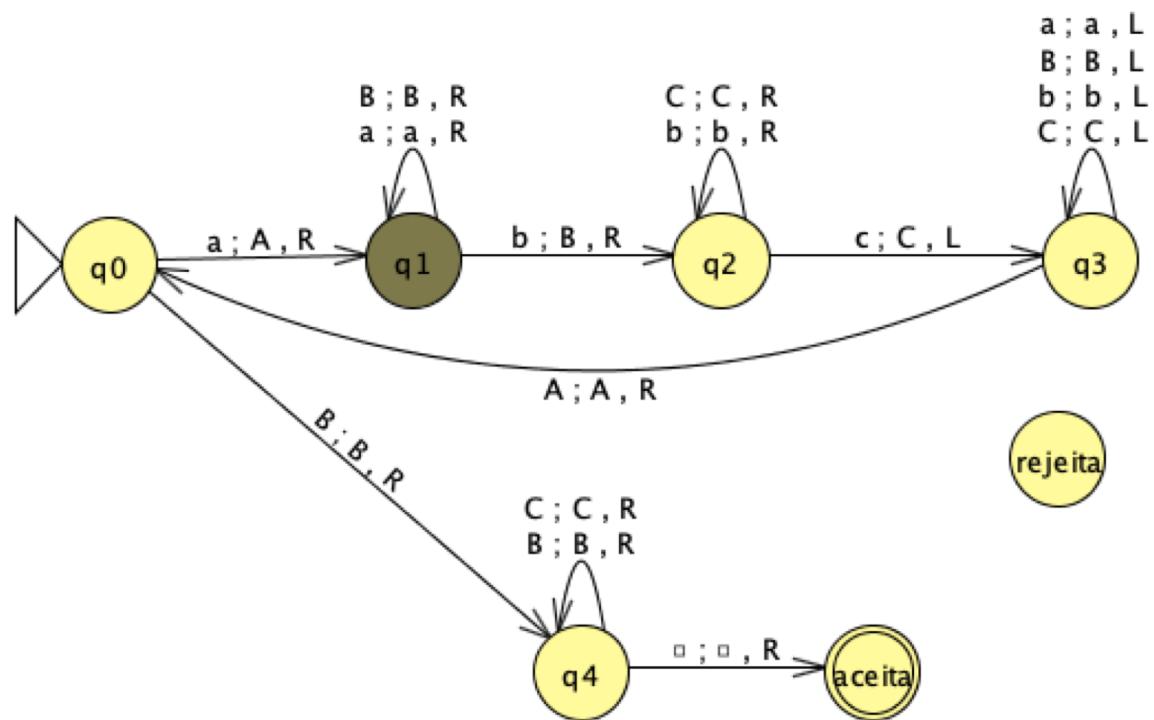
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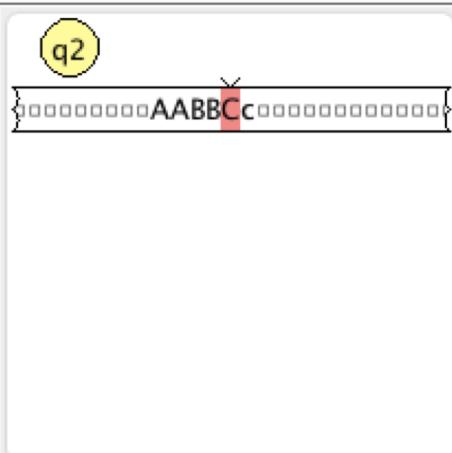
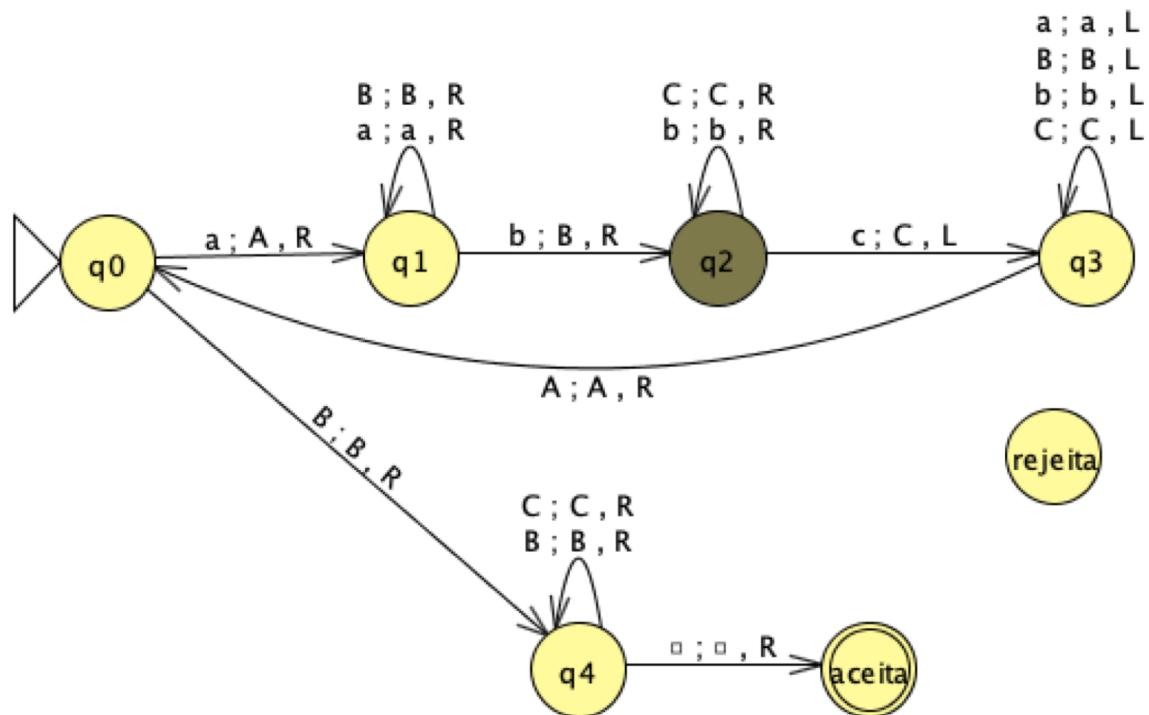
q1

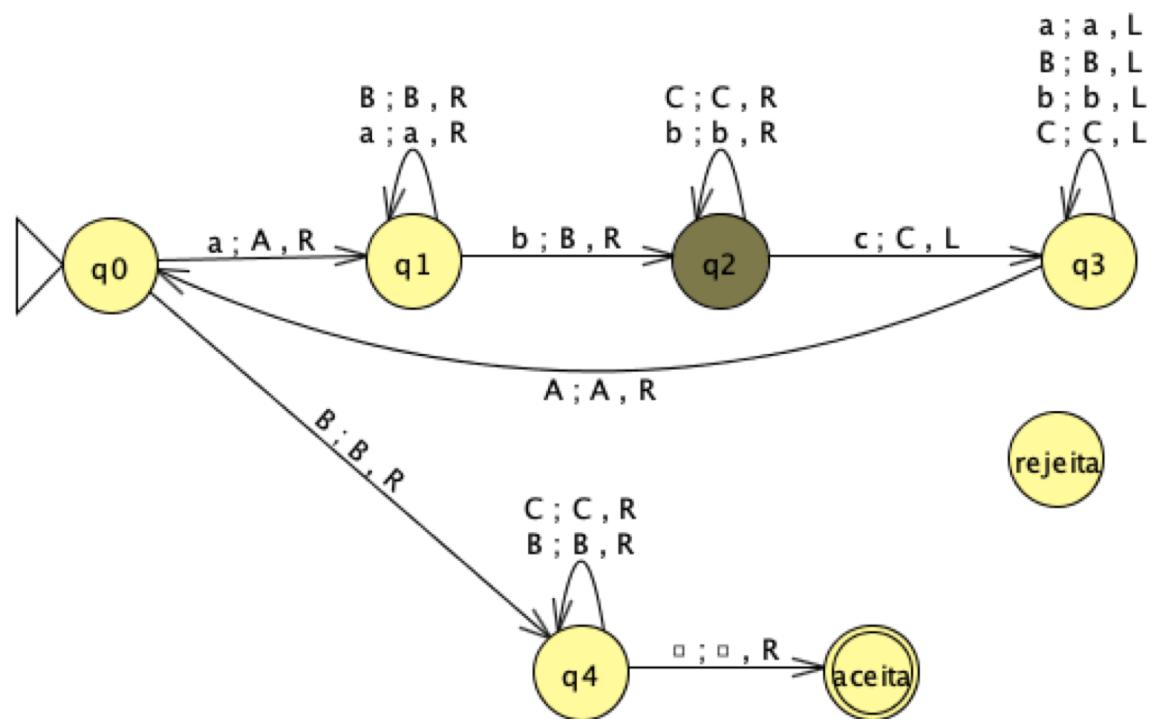
{ AABbCc }

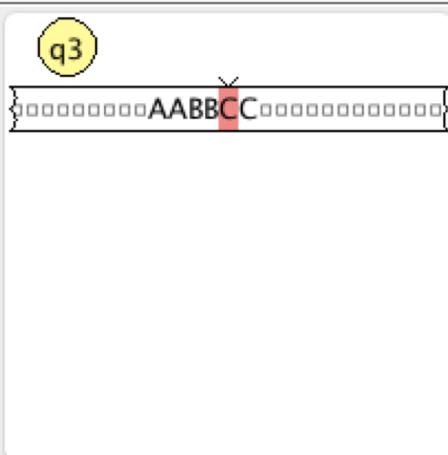
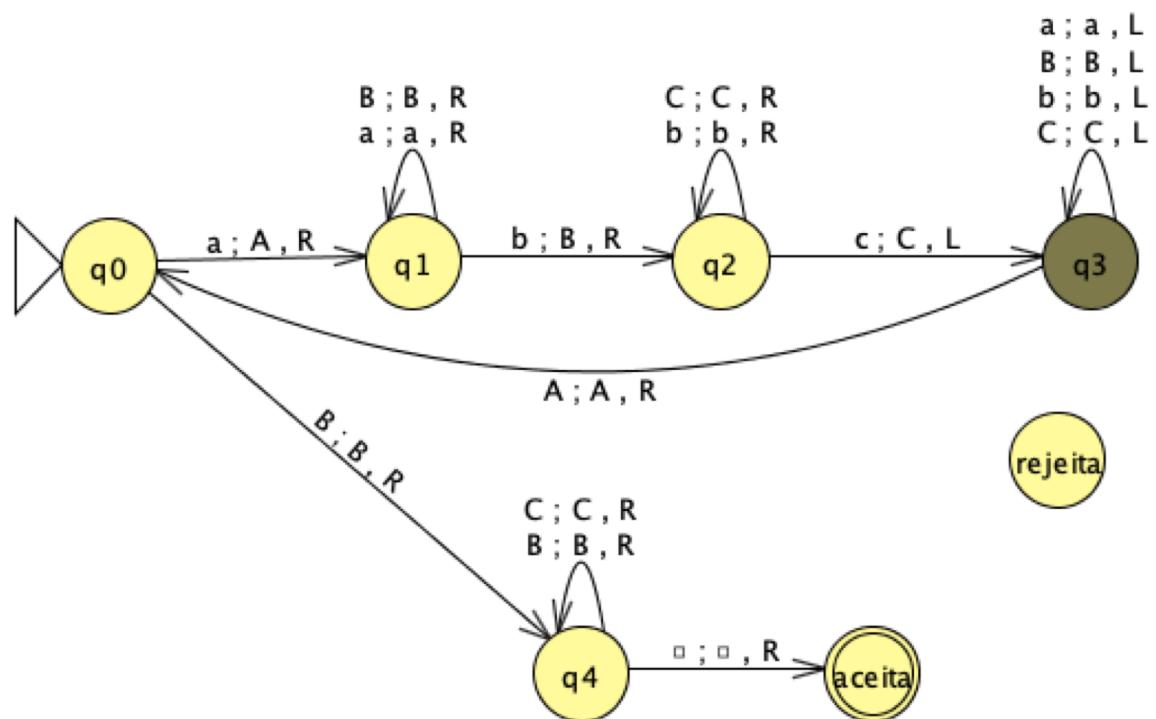


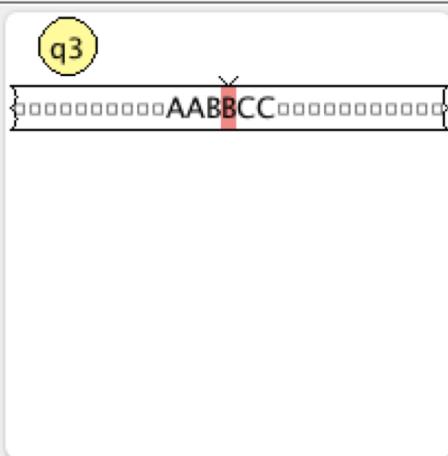
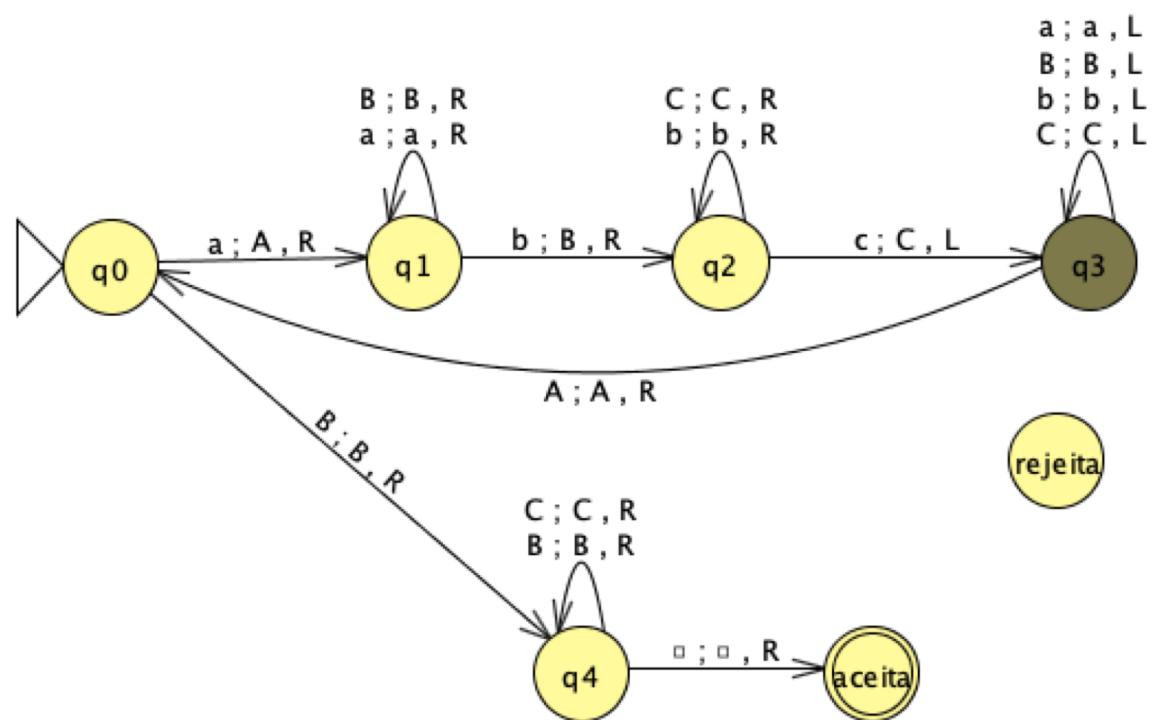
q1

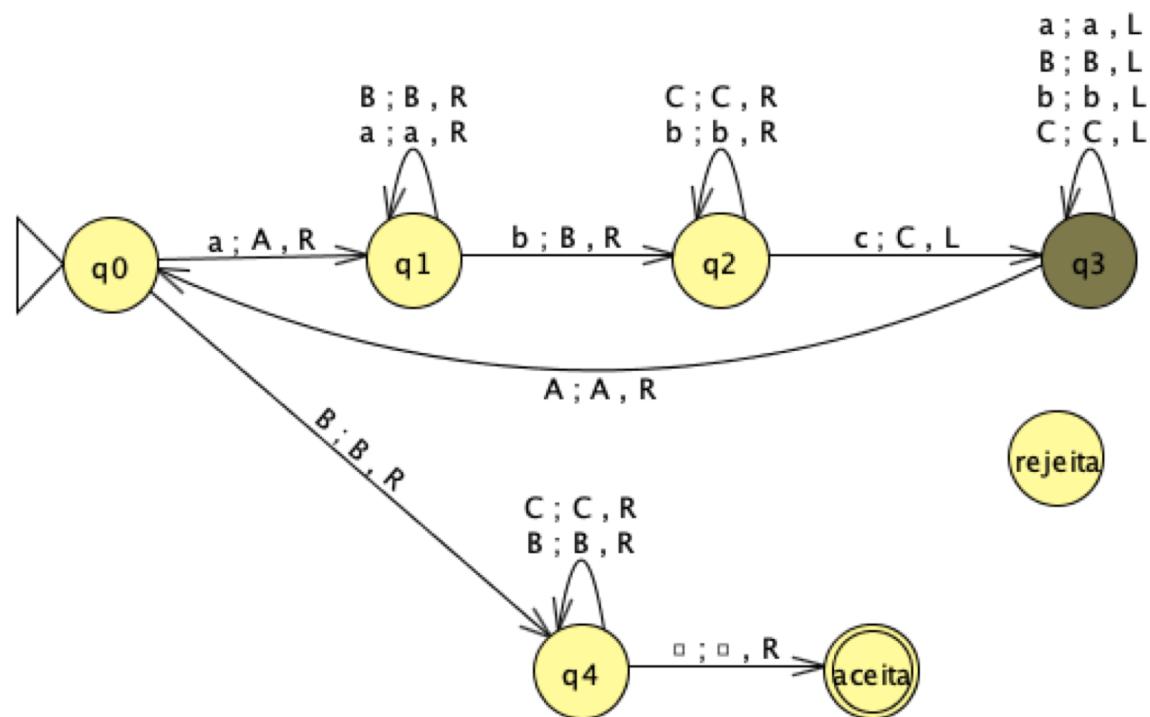
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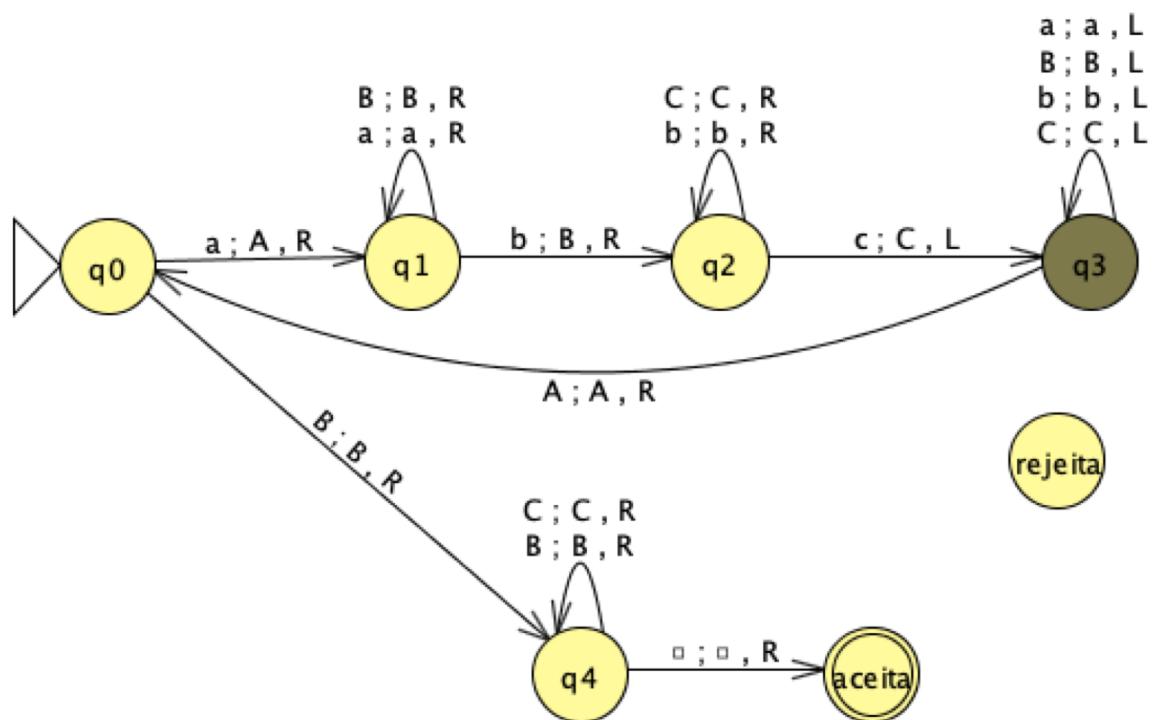






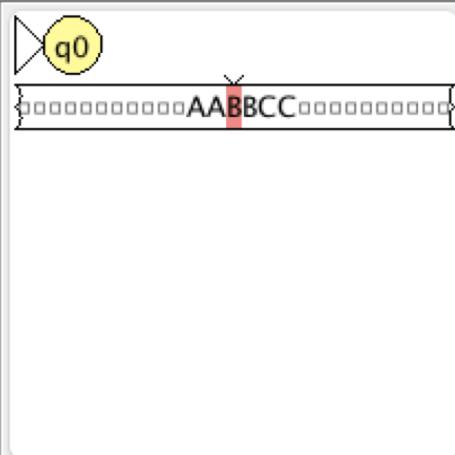
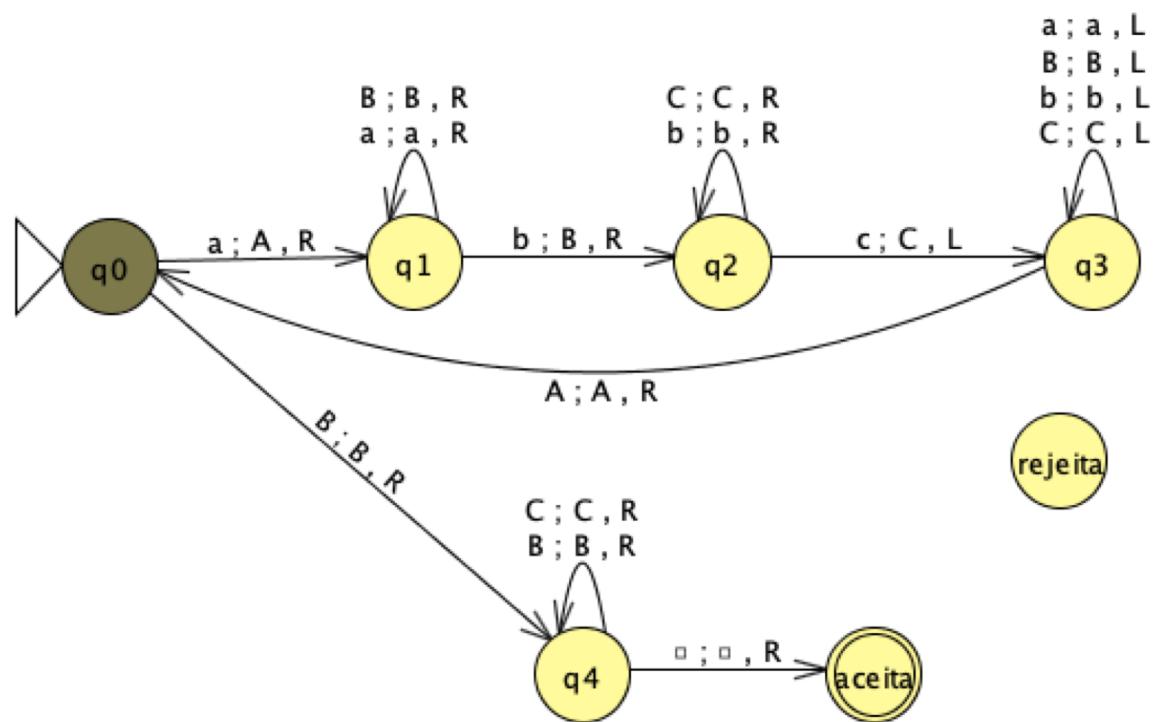


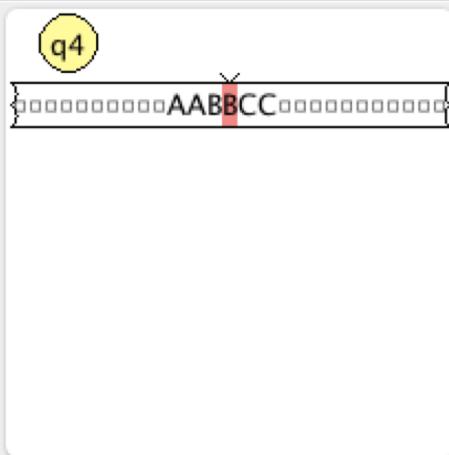
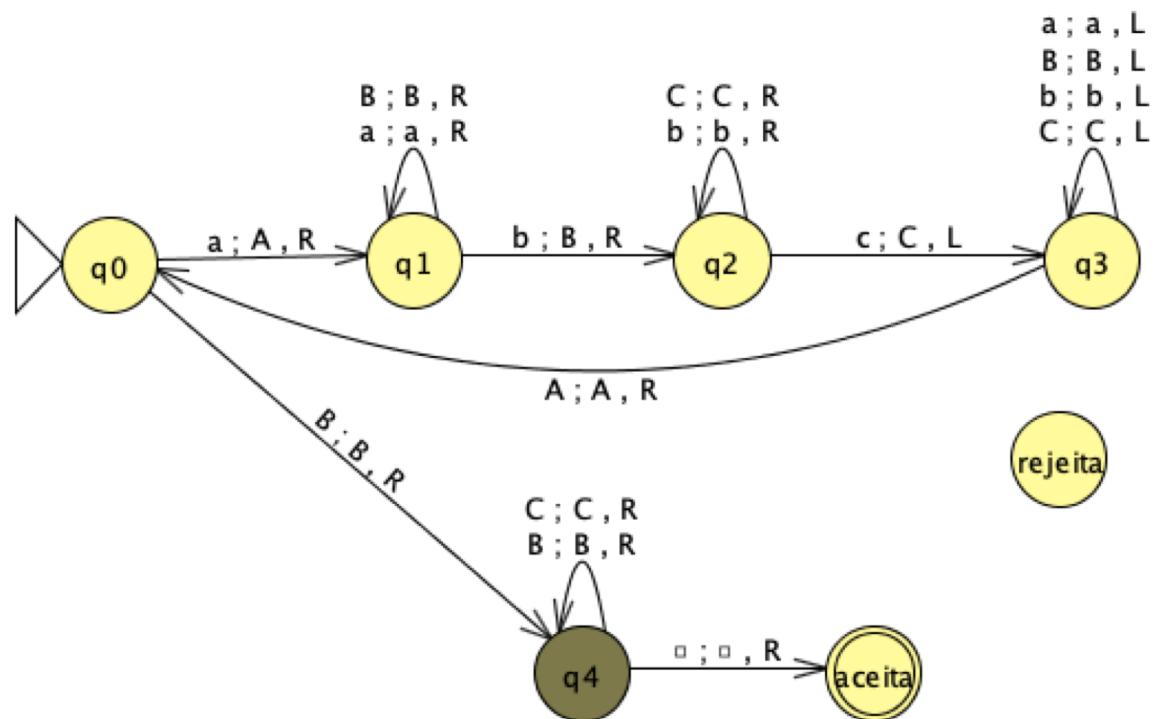


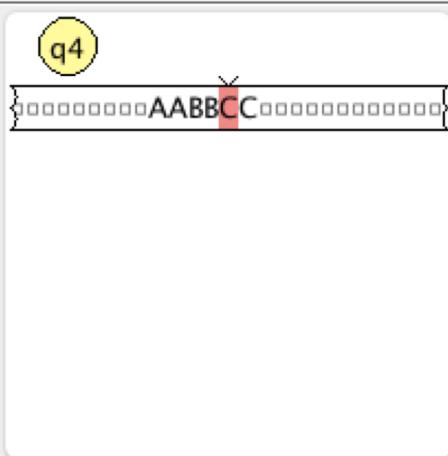
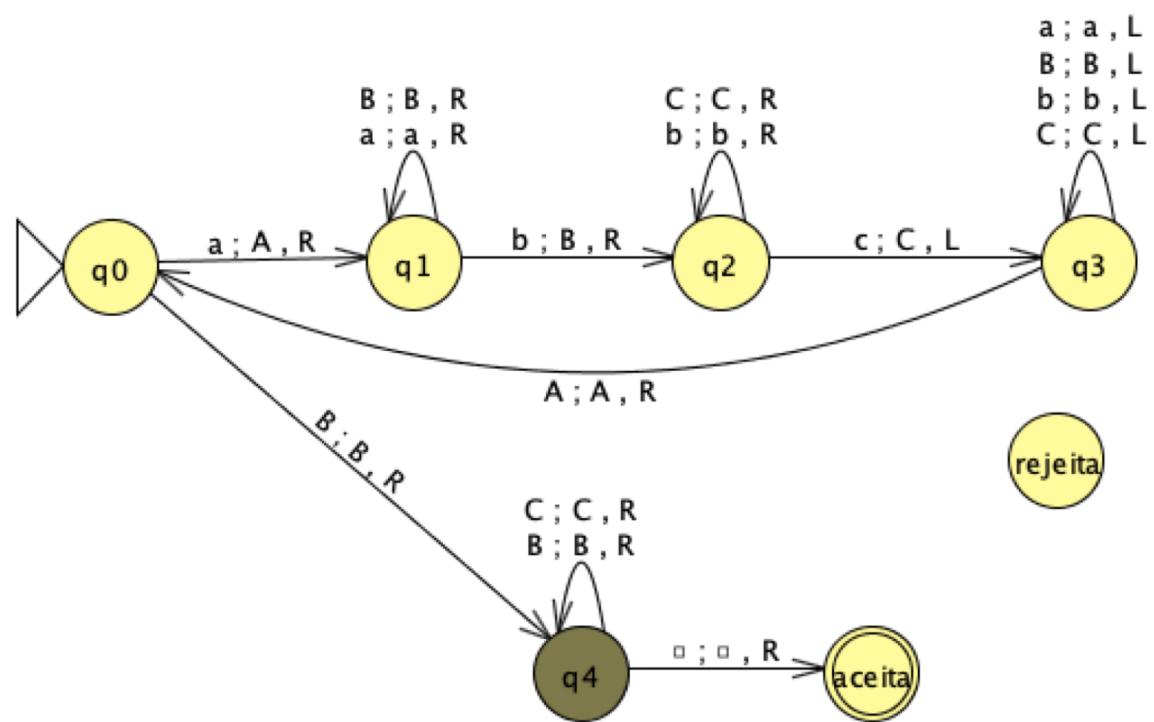


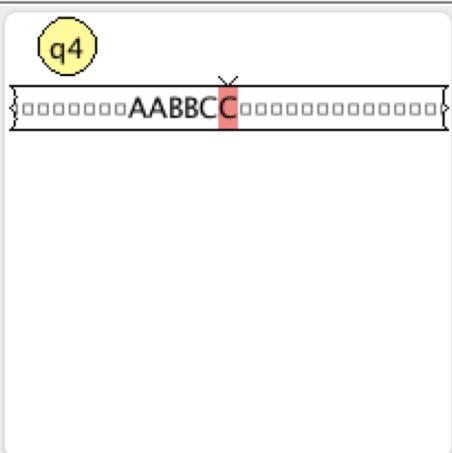
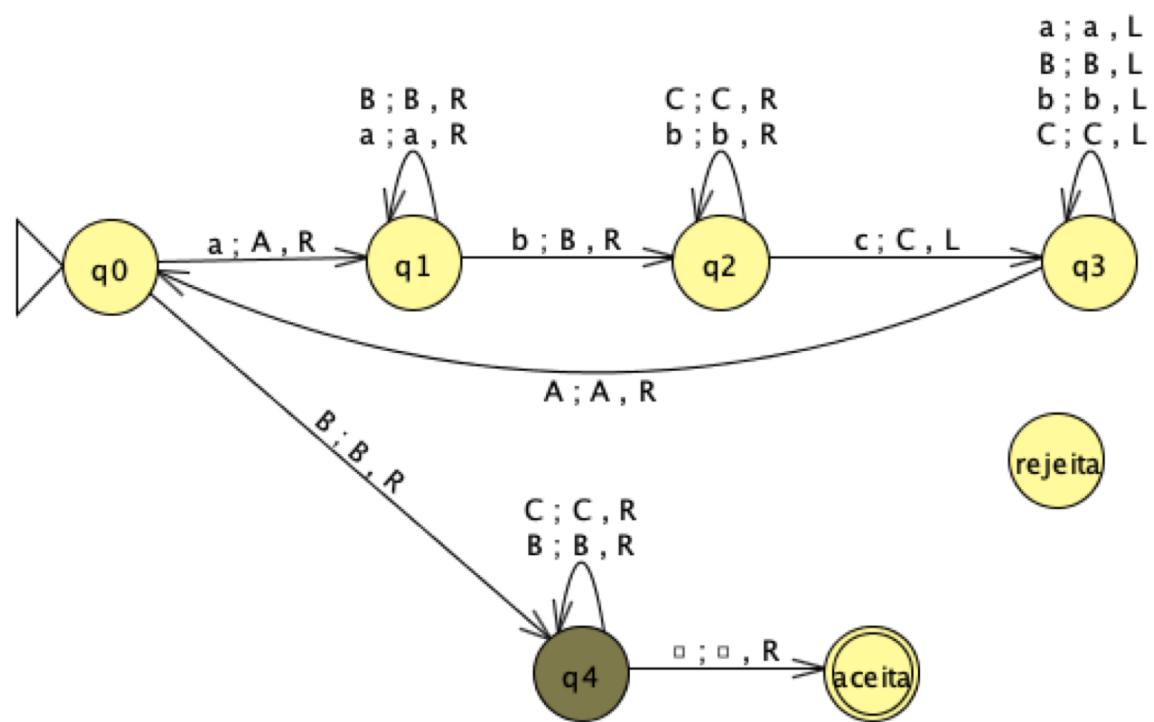
q3

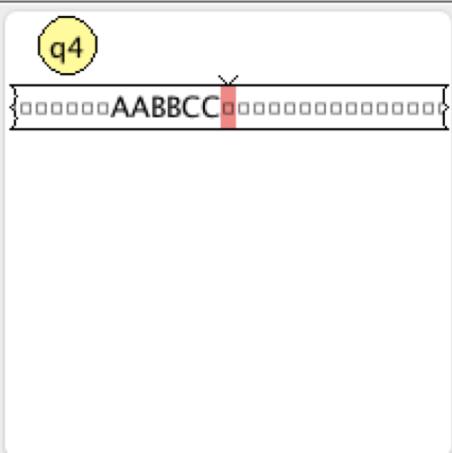
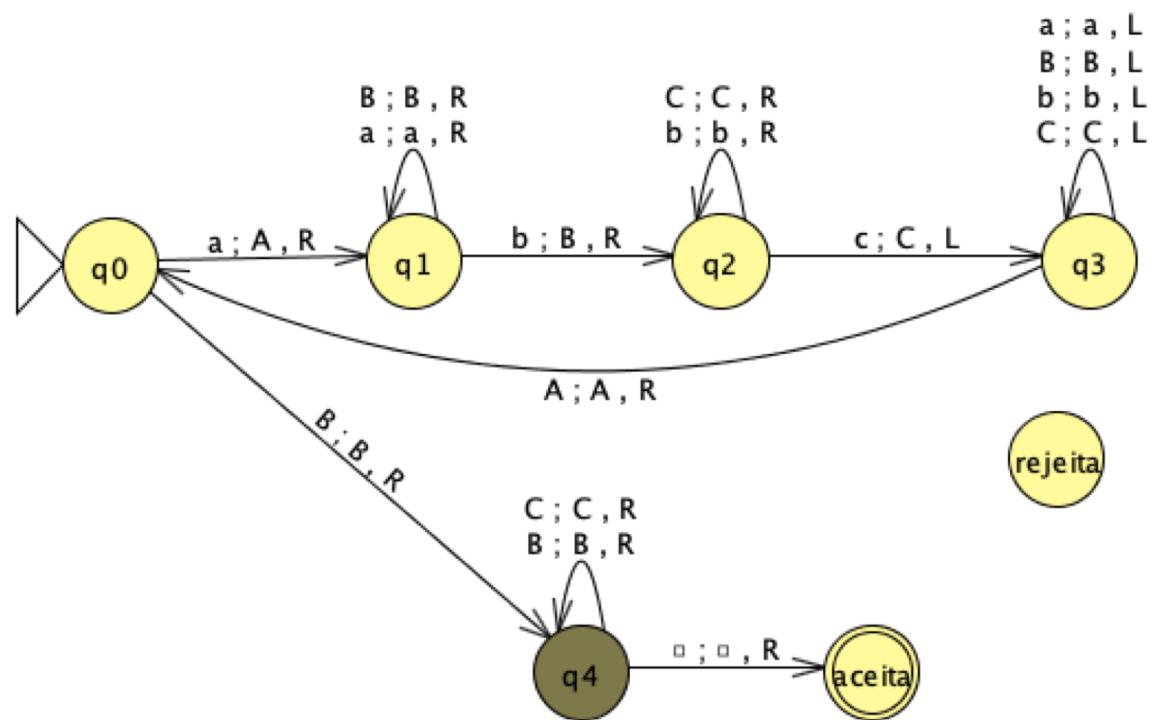
AABBCC

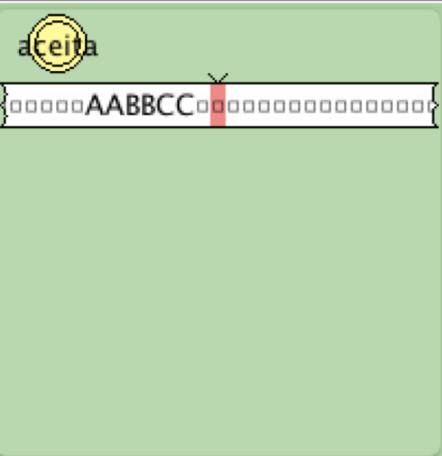
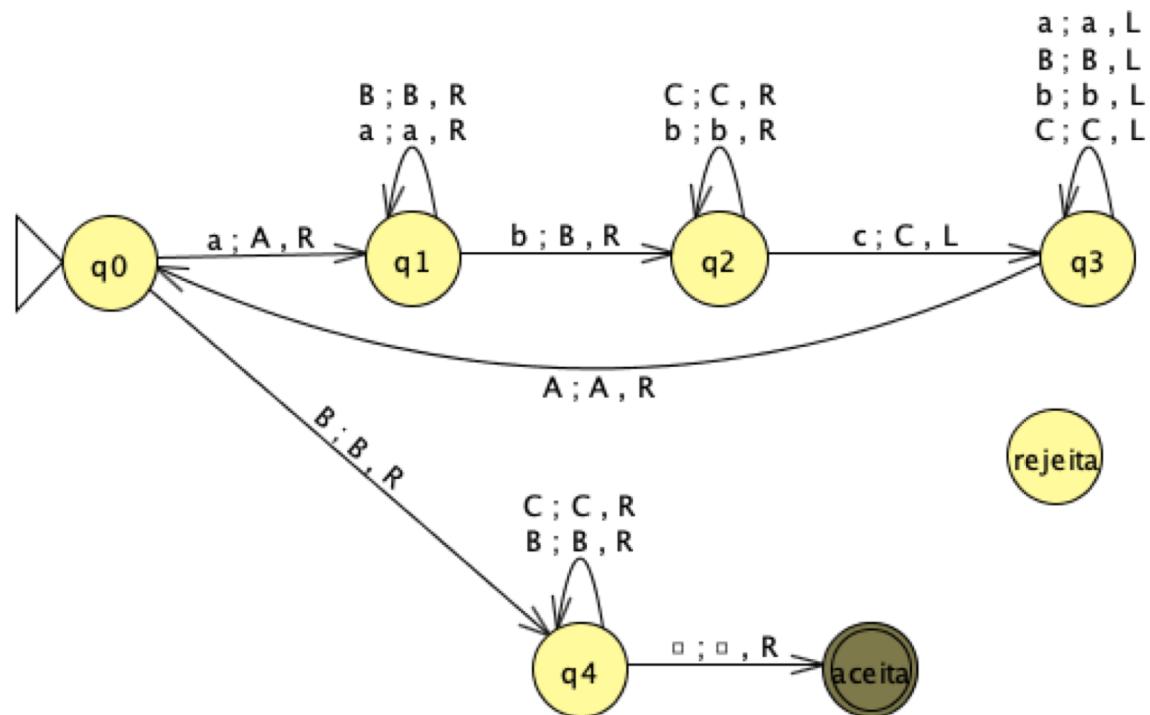






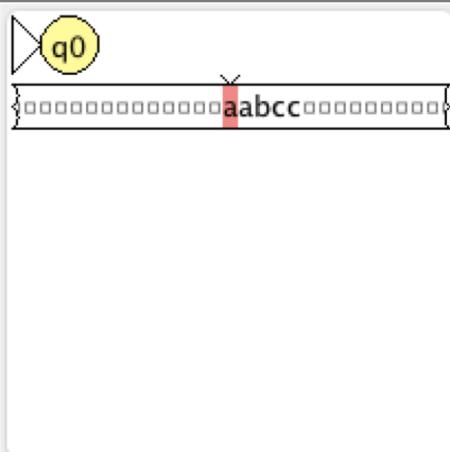
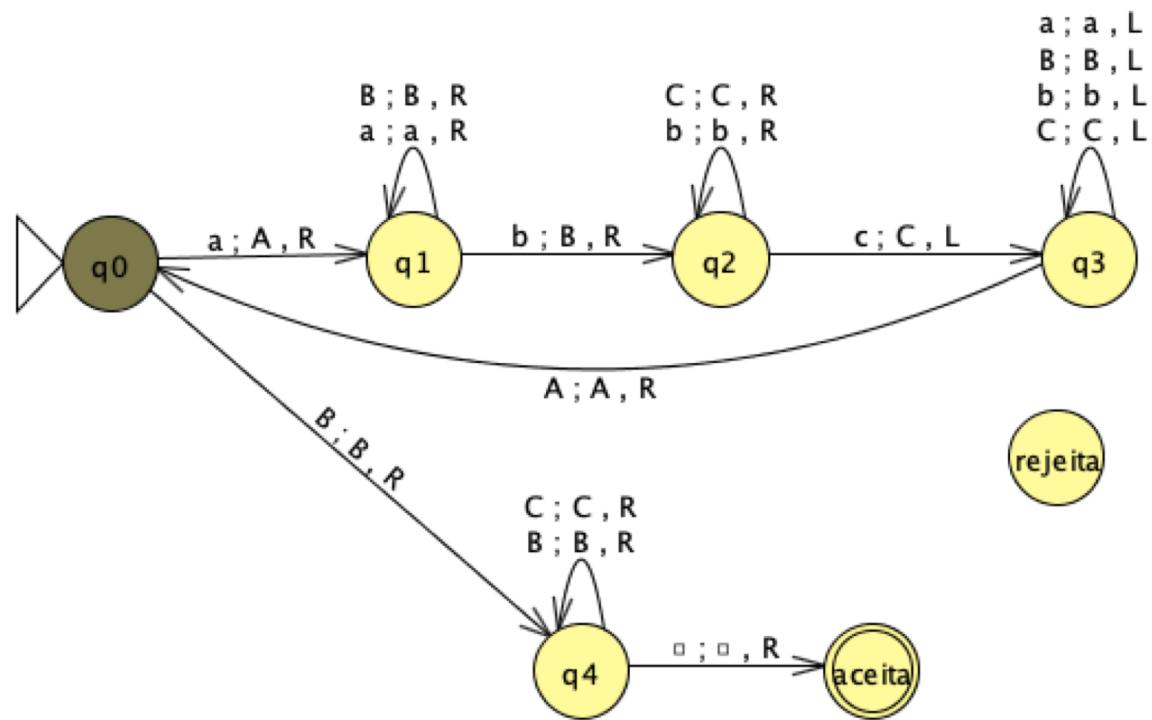


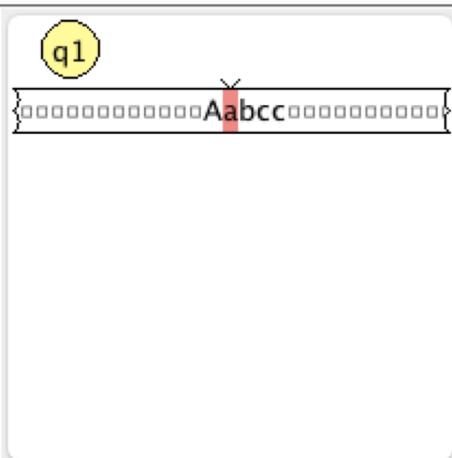
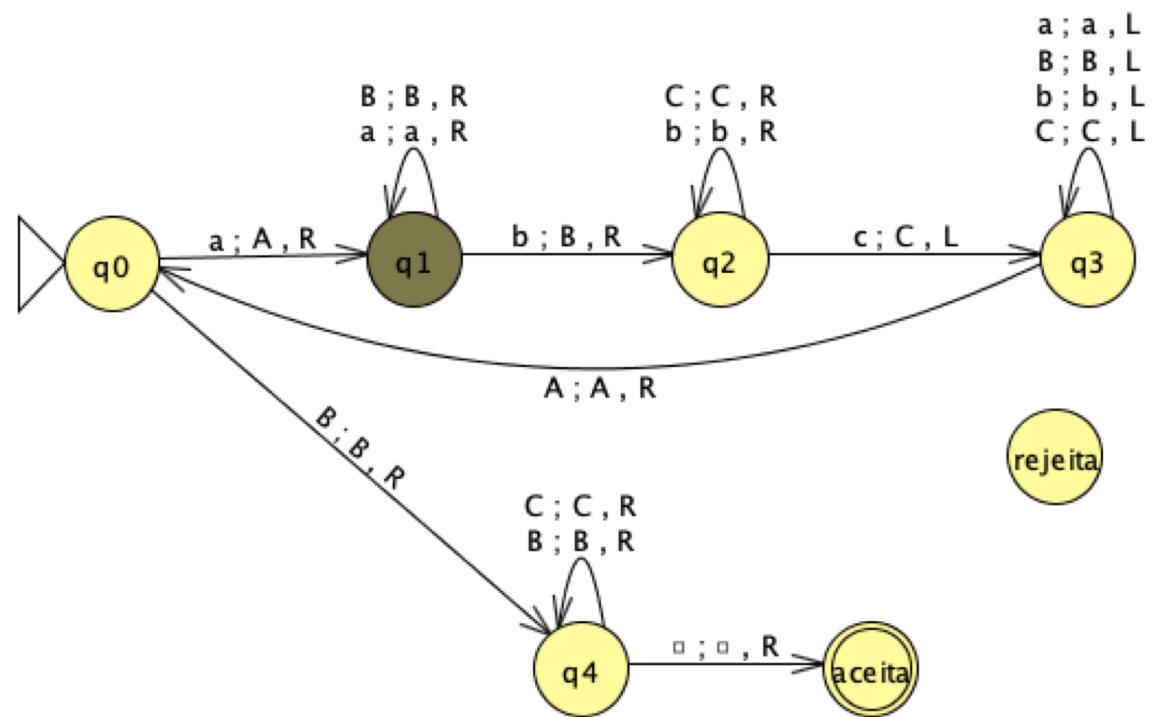


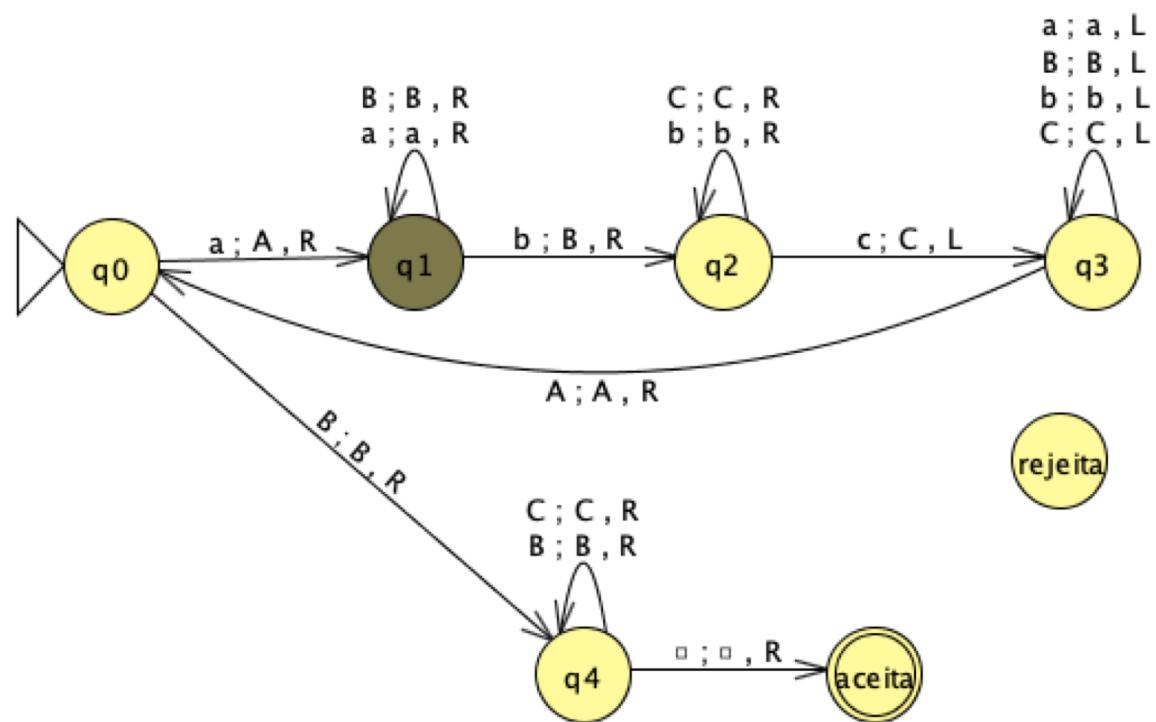


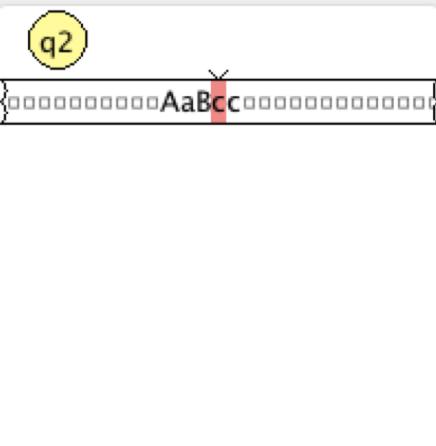
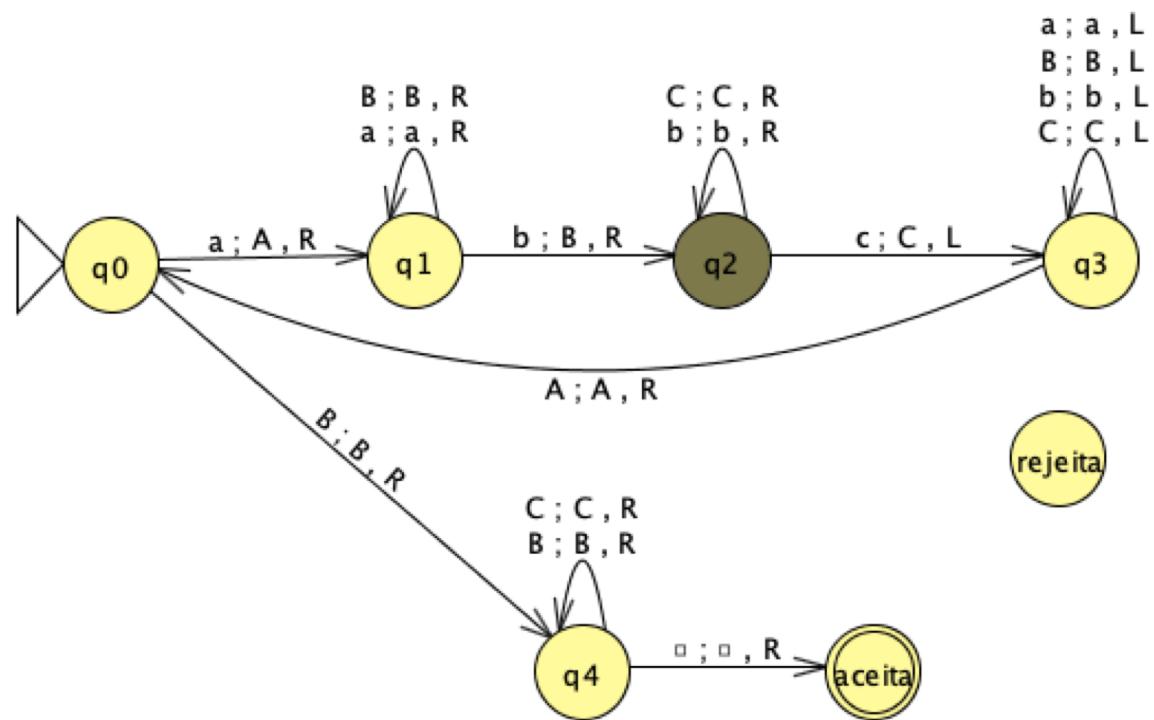
# Simulando rejeição

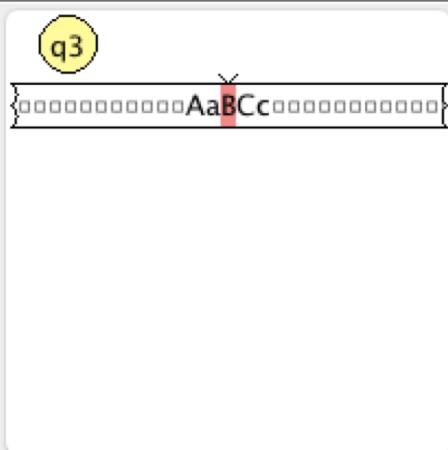
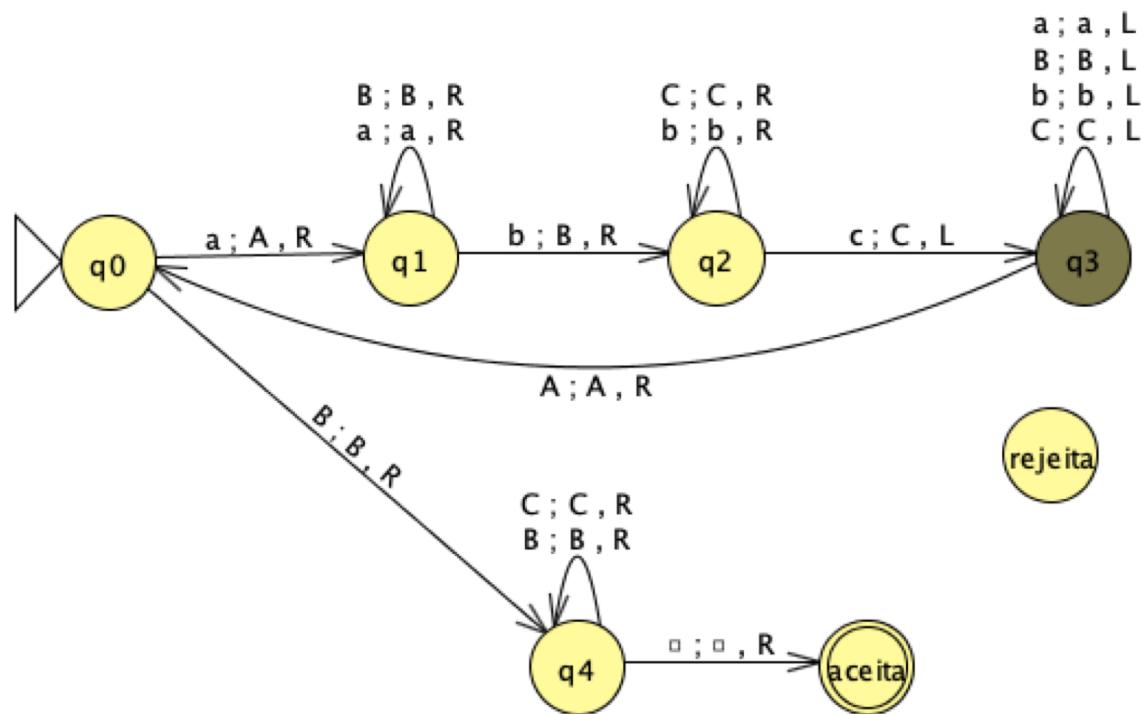
$\omega = aabcc$

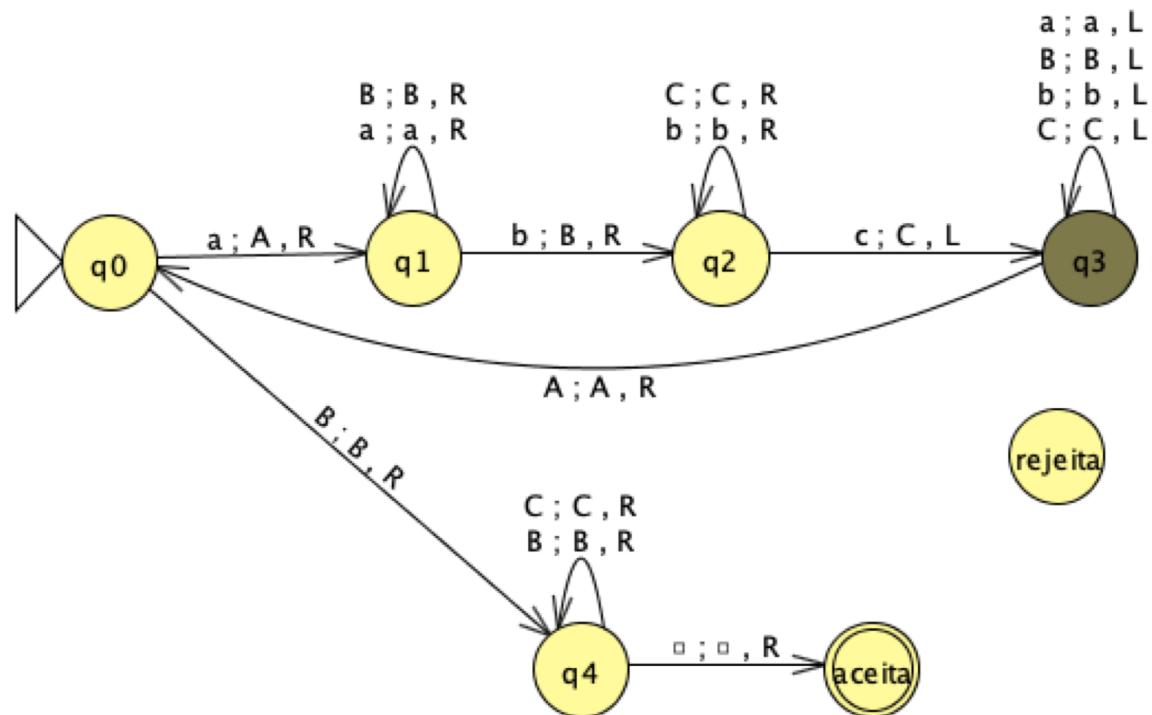






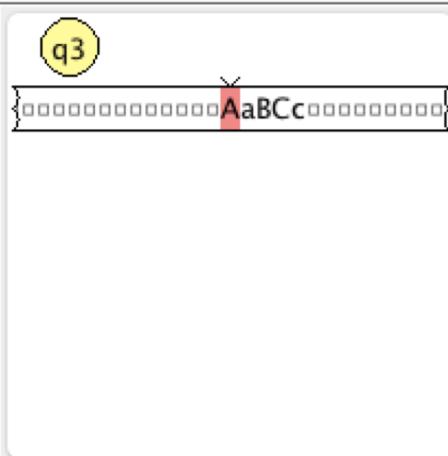
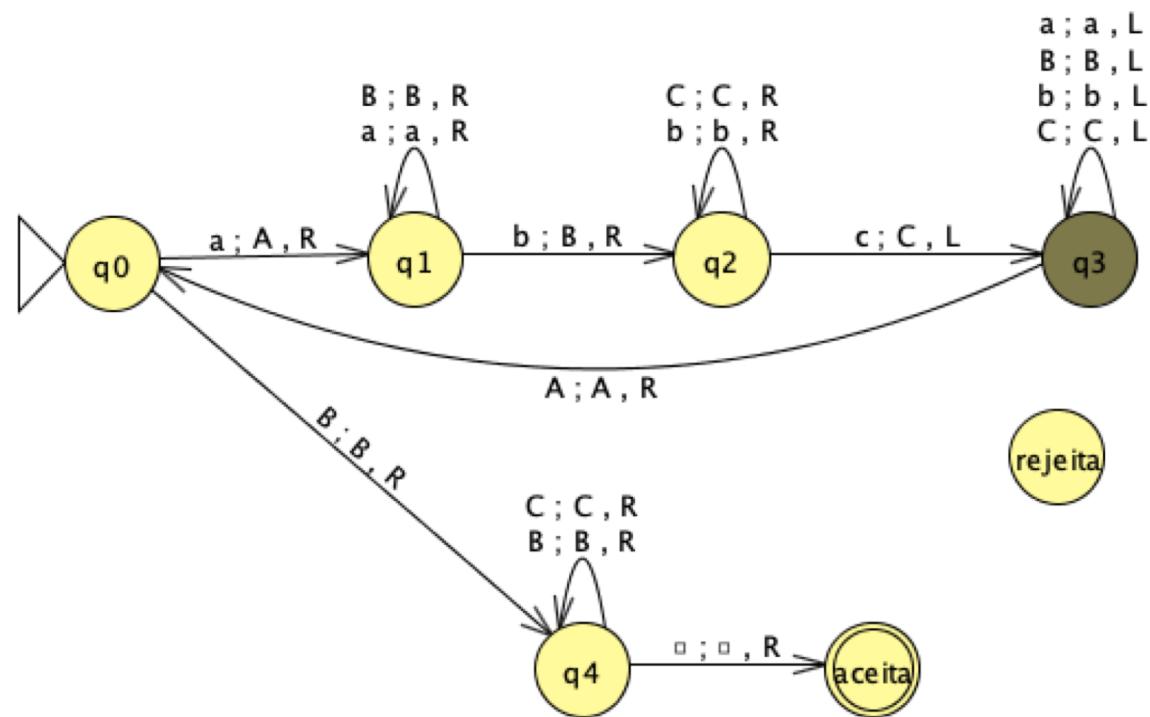


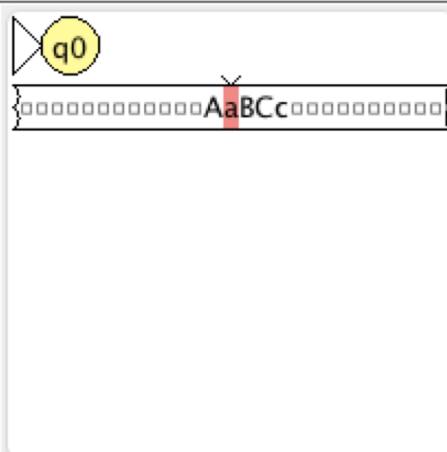
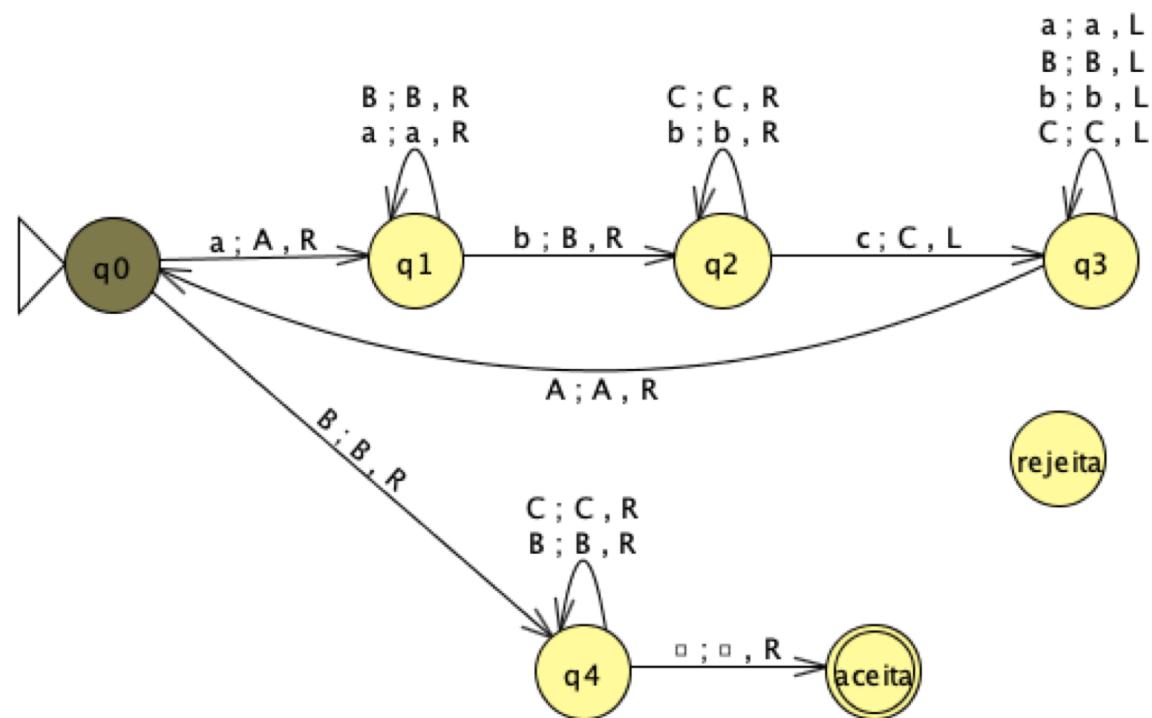


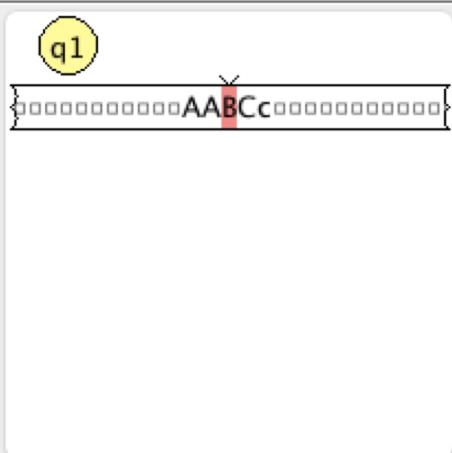
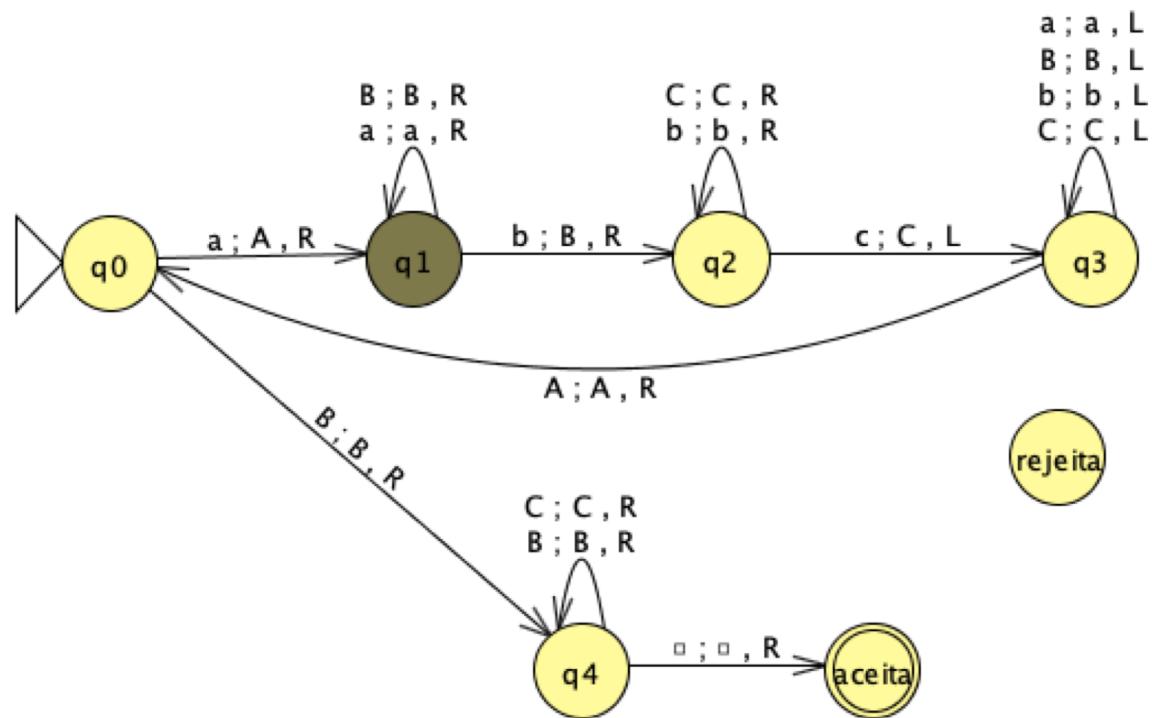


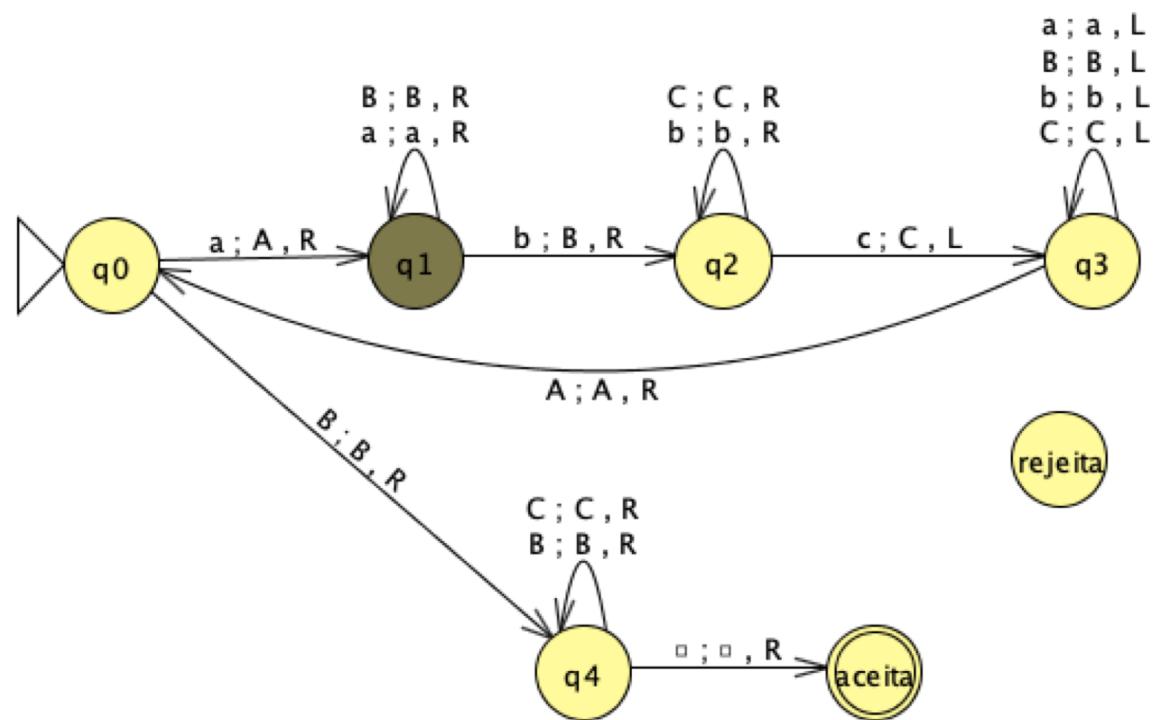
q3

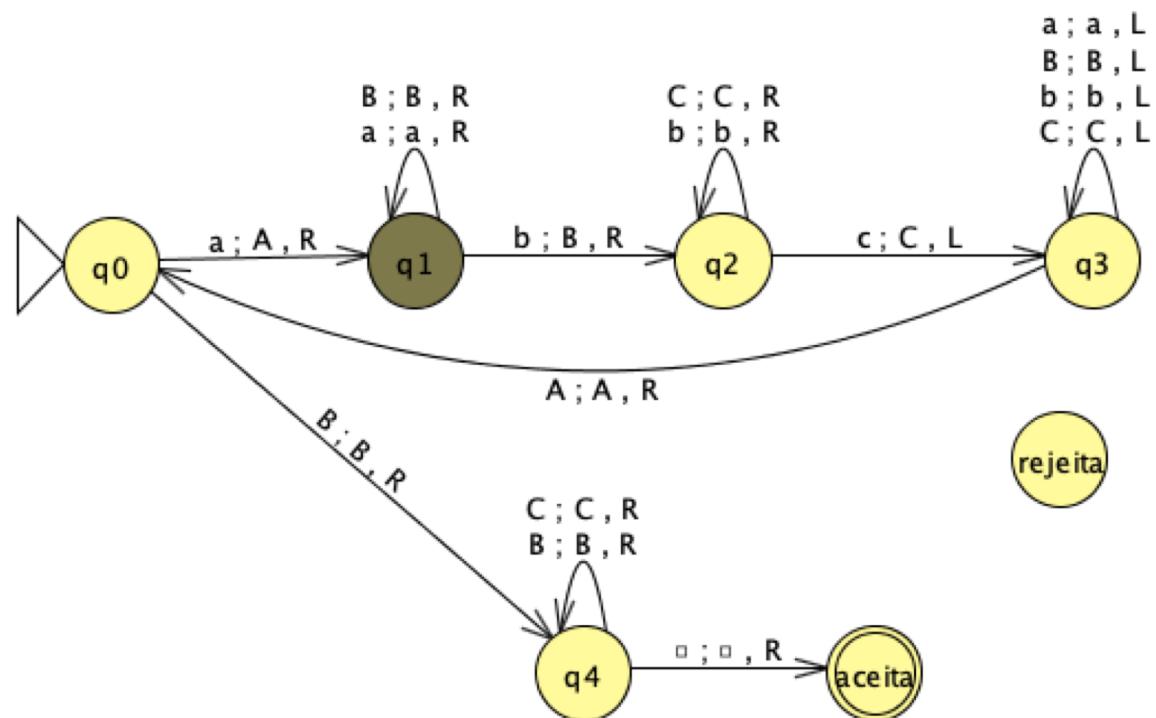
{AaBCc}











q1

{AABCc}

