

# MAC 4722 - Linguagens, Autômatos e Computabilidade

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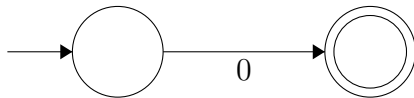
10 de abril de 2016

## Lista 3

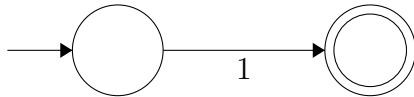
**L3.3** Converter a expressão regular  $0(0 \cup 1)^*01(0 \cup 1)^*1$  para AFN.

**Resposta:** As figuras abaixo mostram passo a passo a construção do AFN que representa a expressão dada.

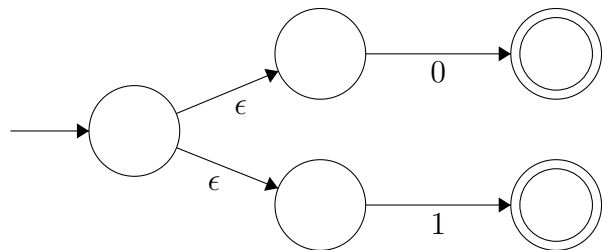
0



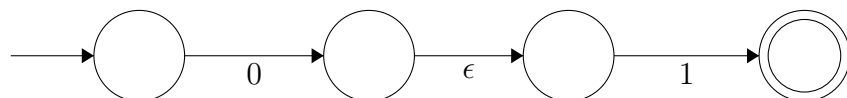
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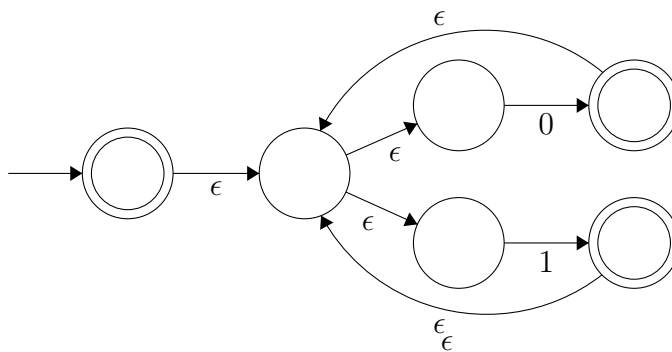
$0 \cup 1$



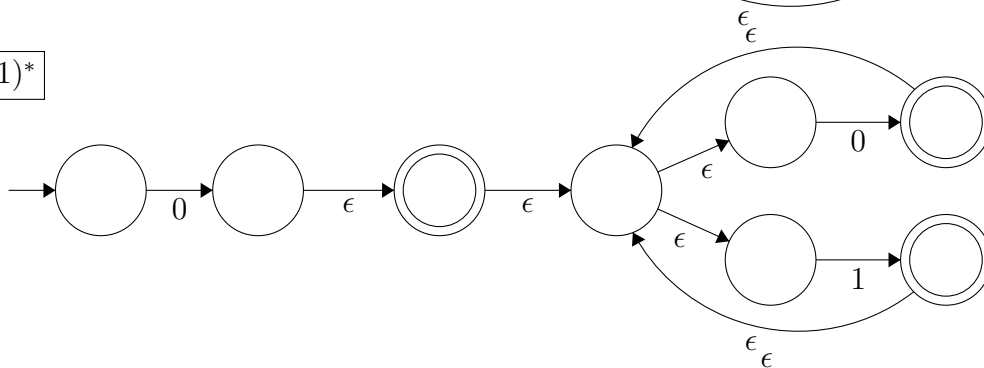
01



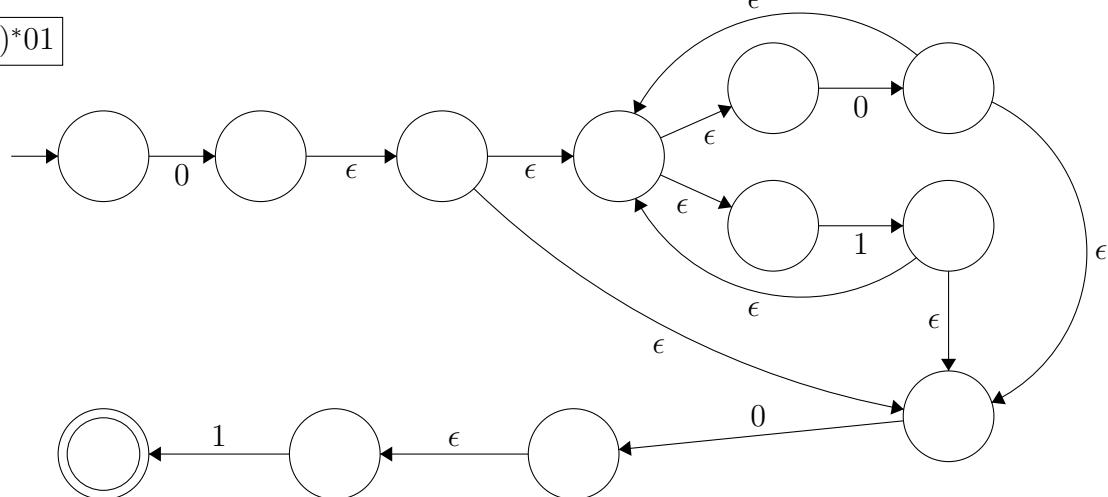
$(0 \cup 1)^*$



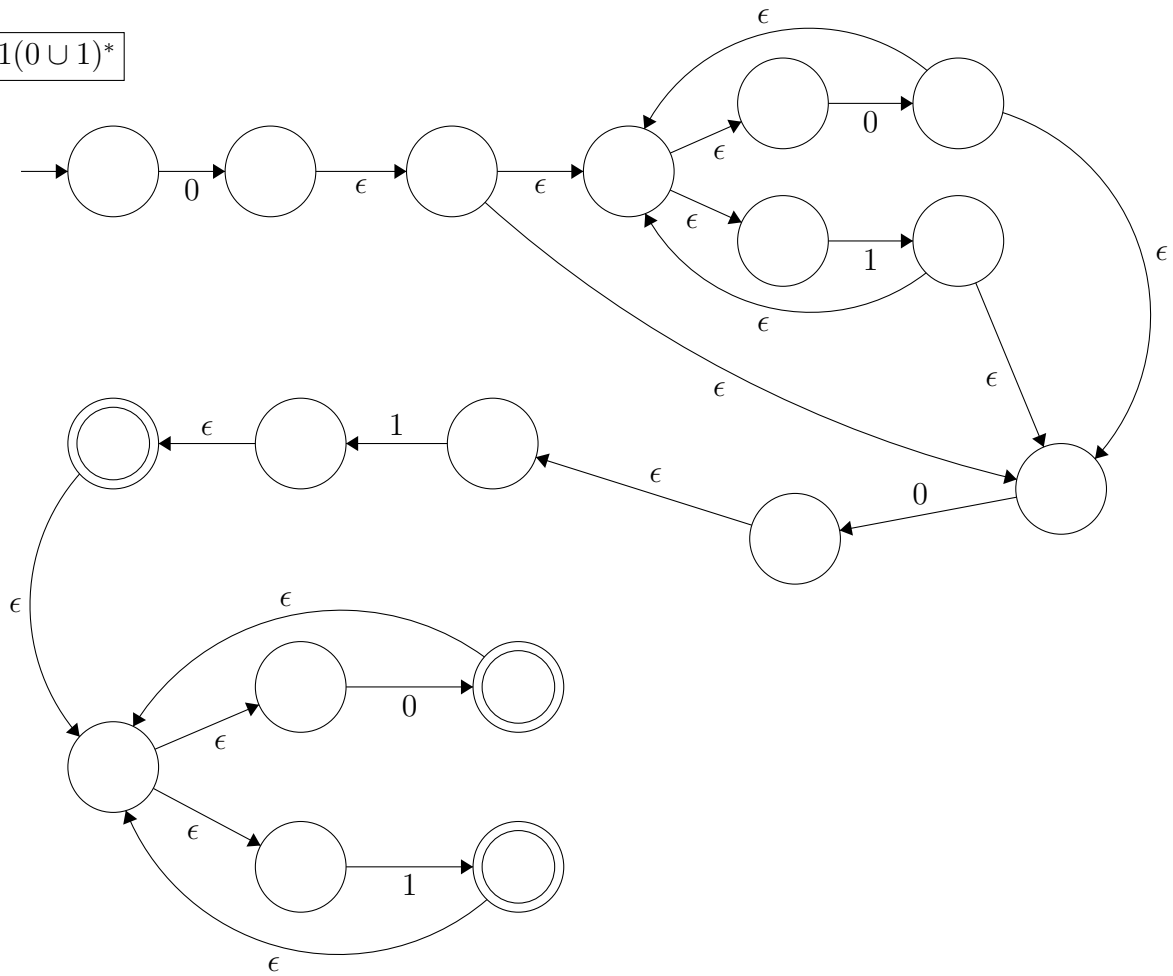
$0(0 \cup 1)^*$



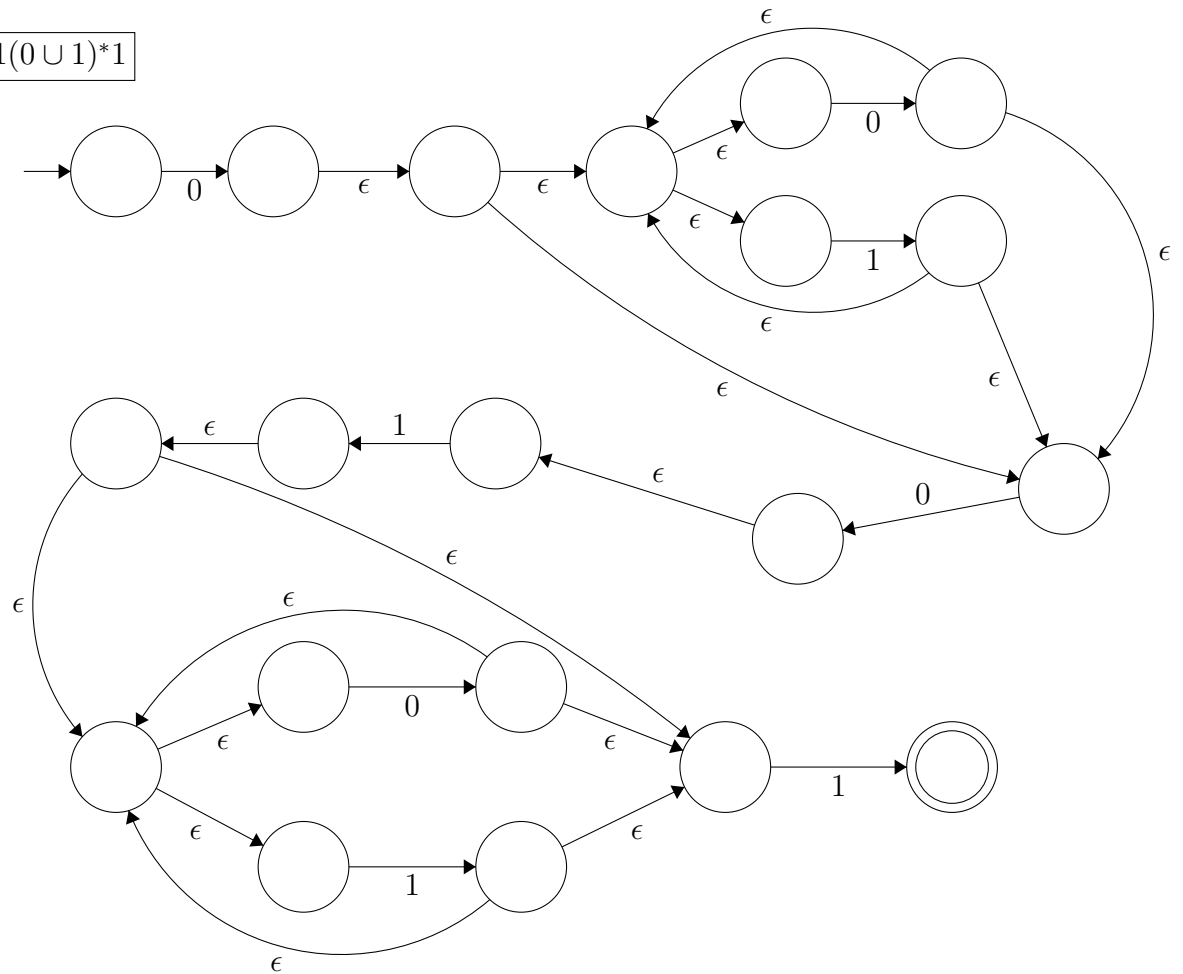
$0(0 \cup 1)^*01$



$0(0 \cup 1)^*01(0 \cup 1)^*$

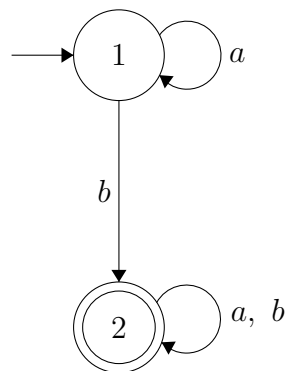


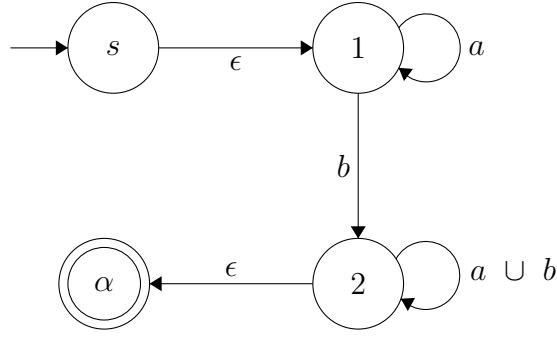
$0(0 \cup 1)^*01(0 \cup 1)^*1$



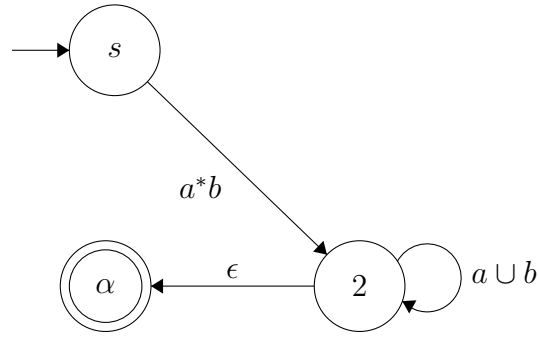
**L3.4** No autômato generalizado da figura 1.67b, foi removido o estado 2, resultando no autômato da figura 1.67c. Foi então removido o estado 1 para produzir o autômato da figura 1.67d, obtendo-se assim uma expressão regular final. Refazer as contas produzindo um autômato generalizado ao se remover o estado 1 daquele da figura 1.67b. Deste autômato generalizado, remova o estado 2 e produza um novo autômato generalizado final com dois estados.

**Resposta:**





Removendo o estado 1, onde  $q_{rem} = 1, q_i = s, q_j = 2, R_1 = \epsilon, R_2 = a, R_3 = b, R_4 = \emptyset$ , temos  $(\epsilon)(a)^*(b) \cup (\emptyset) = a^*b$ :



Removendo o estado 2, onde  $q_{rem} = 2, q_i = s, q_j = \alpha, R_1 = a^*b, R_2 = a \cup b, R_3 = \epsilon, R_4 = \emptyset$ , temos  $(a^*b)(a \cup b)^*(\epsilon) \cup (\emptyset) = (a^*b)(a \cup b)^*$ :

