IBm1088 Linguagens Formais e Autômatos

– Lista de exercícios sobre linguagens formais –

Lista de exercícios fundamentada nos trabalhos de Mark V. Lawson da Heriot-Watt University,

1. Considerando $\Sigma = \{a, b\}$ determine o conjunto palavras oriundas das seguintes linguagens:

   (a) $a + b^*$ (b) $a^* + b^*$ (c) $(a^* + b^*)^*$

2. Para cada tabela de transição desenho o diagrama correspondente. Considere $\Sigma = \{0, 1\}$.

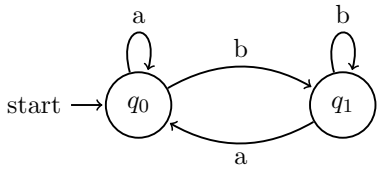
   (a)

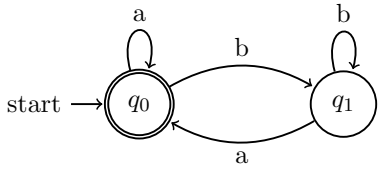
	0	1
s_0	s_1	s_0
s_1	s_2	s_1
s_2	s_0	s_2

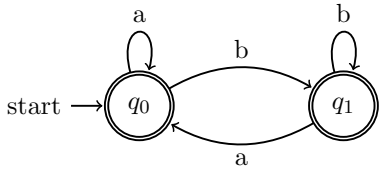
   (b)

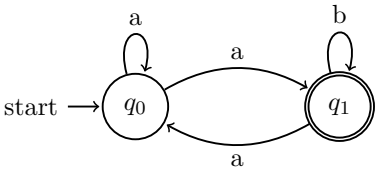
	0	1
s_0	s_1	s_1
s_1	s_0	s_2
s_2	s_0	s_1

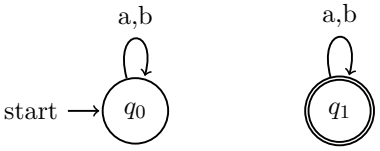
3. Determine se o diagrama é um AFD. Justifique a sua resposta. Considere $\Sigma = \{a, b\}$.

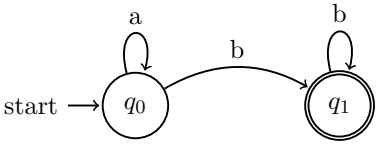
   (a)


   (b)


   (c)


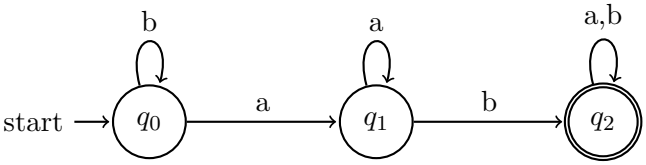
   (d)


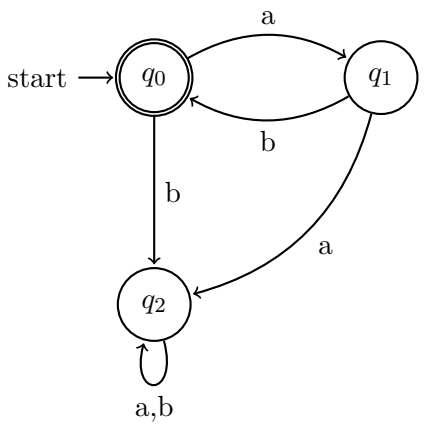
   (e)


   (f)


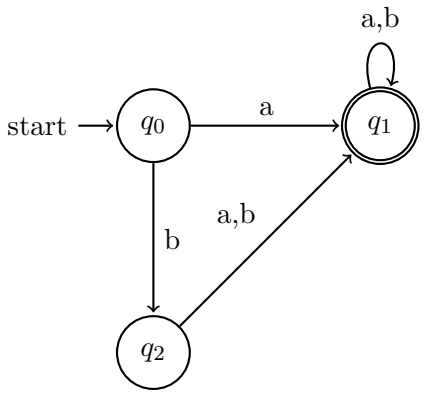
4. Este é para pensar, e muito! Dados os números binários usando $\Sigma = \{0, 1\}$, escreva um AFD que gere ou reconheça todos os múltiplos de três. Note que não consideraremos os zeros antes do número como significativos, ou seja, os seguintes números são iguais: 11, 011, 0011, 00011.

5. Descreva as linguagens reconhecidas pelos autômatos a seguir:

   (a)




(b)



(c)

6. Construa um autômato que reconheça $L = \{x \in (a \cup b)^* : |x| \equiv (\text{mod} 4)\}$.

Bom trabalho!