

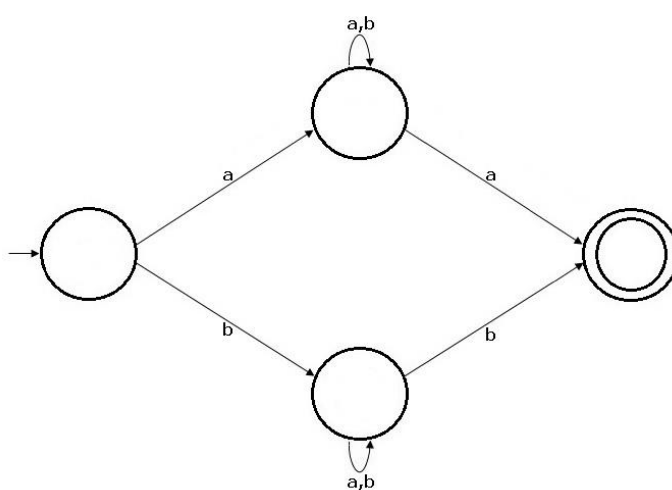
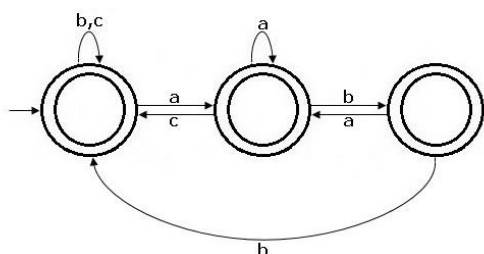
Curso:	Ciência da Computação	Valor	0,0
Disciplina:	Fundamentos Teóricos da Computação		
Professor (a):	João Paulo C. Aramuni	Nota	
Nome:			
Nº da Atividade/Nome:	Lista 04		
Data:			
Valor:	0,0 pts		

**Assuntos: APD; APN; ER.**

1. Construa AFNs que reconheçam:

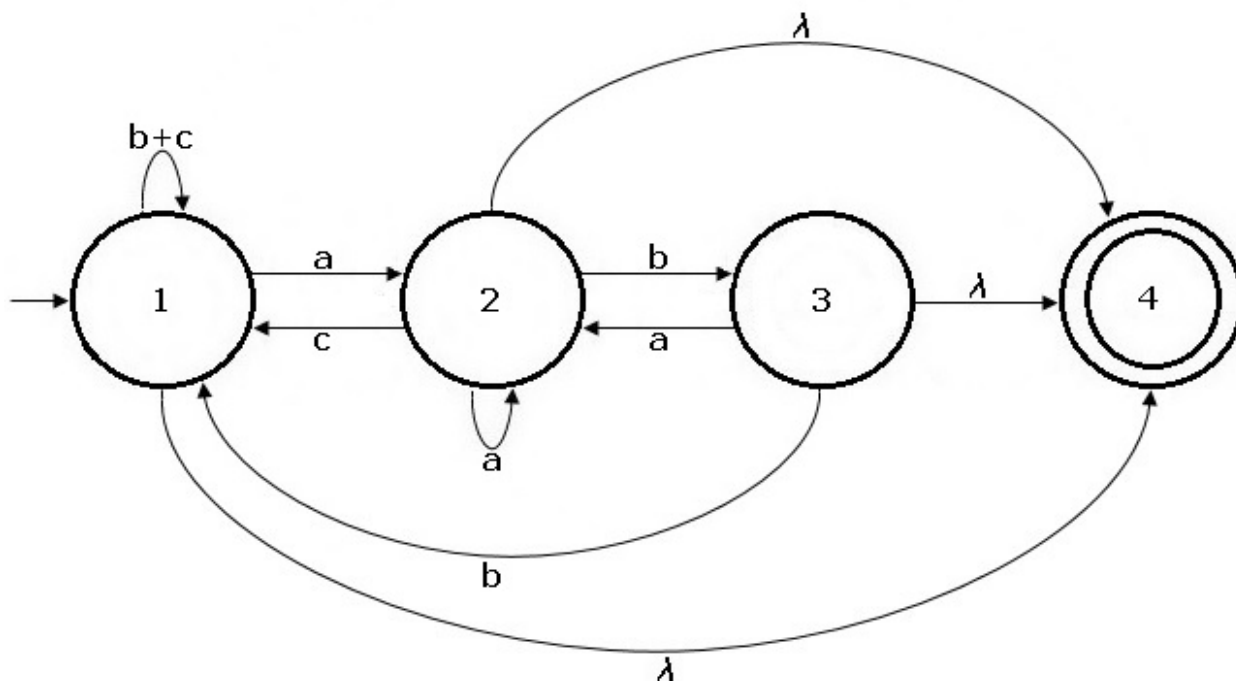
a)  $L_1 = \{w \in \{a,b,c\}^* \mid w \text{ não contém } abc\}$ , com 3 estados.

b)  $L_2 = \{w \in \{a,b\}^* \mid |w| \geq 2 \text{ e o primeiro e o último símbolos de } w \text{ são idênticos}\}$ , com 4 estados.

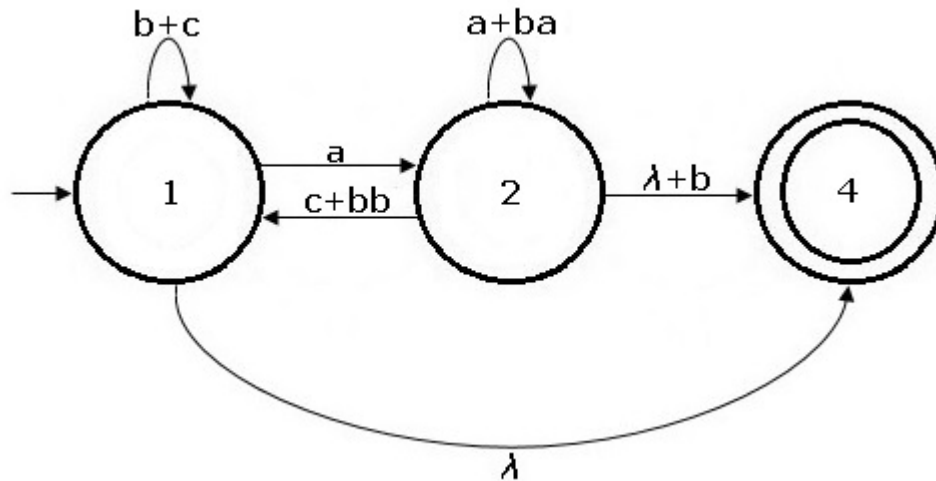


2. Encontre expressões regulares que denotem as linguagens  $L_1$  e  $L_2$  da primeira questão.

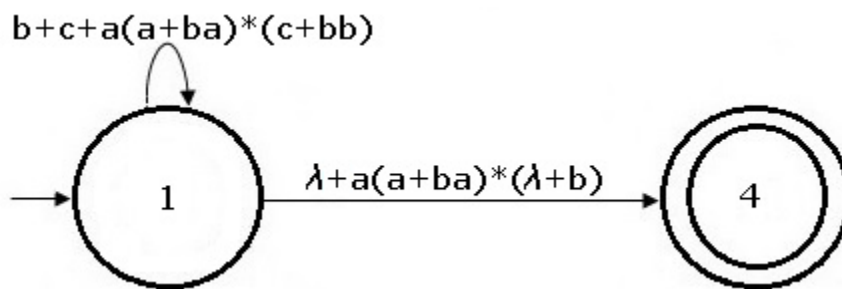
Para  $L_1$ , a ER será construída a partir do AFN obtido no item (a) da primeira questão:



Eliminando-se o estado 3:



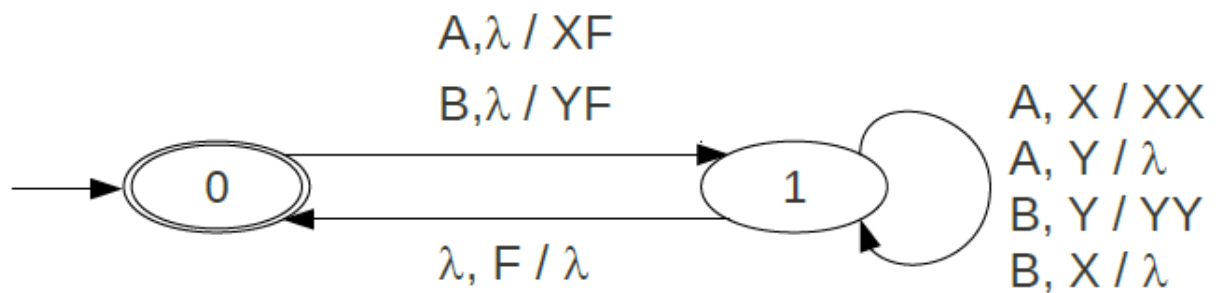
Eliminando-se o estado 2:



ER:  $(b + c + a(a+ba)^*(c+bb))^*(\lambda + a(a+ba)^*(\lambda+b))$ .

Uma ER para  $L_2$  é:  $a(a+b)^*a + b(a+b)^*b$

3. Considere o APD abaixo. Marque com V as palavras reconhecidas por este APD e com F as palavras não reconhecidas por este APD.

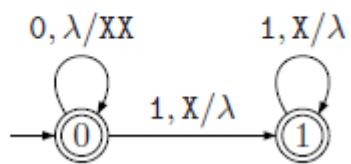


- ( F ) – BBABBAA
- ( F ) – BBABAAA
- ( F ) – ABABBAB
- ( F ) – ABABAAABB
- ( V ) – AABABBAB

4. Construa APDs para reconhecer as seguintes linguagens:

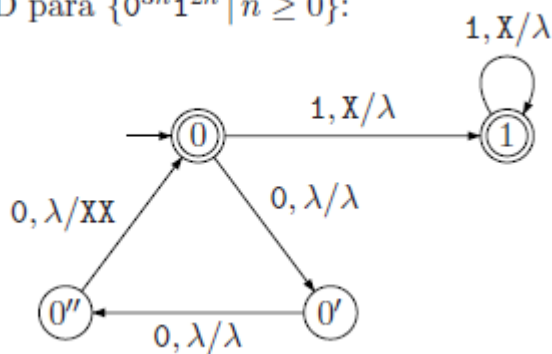
a) Um APD para  $\{ 0^n 1^{2n} \mid n \geq 0 \}$

Um APD para  $\{0^n 1^{2n} \mid n \geq 0\}$ :

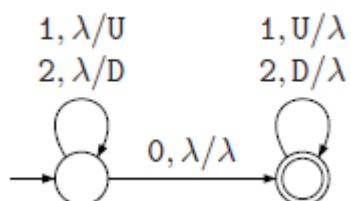


b) Um APD para  $\{0^{3n} 1^{2n} \mid n \geq 0\}$

Um APD para  $\{0^{3n} 1^{2n} \mid n \geq 0\}$ :

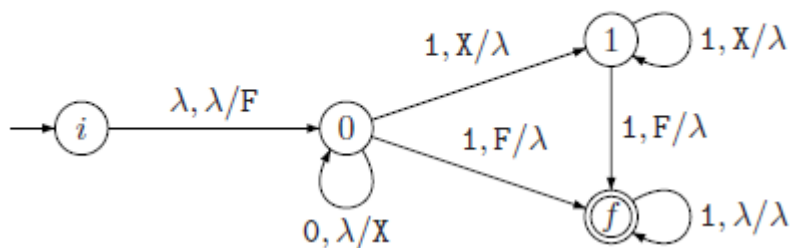


c) Um APD para  $\{w0w^r \mid w \in \{1,2\}^*\}$



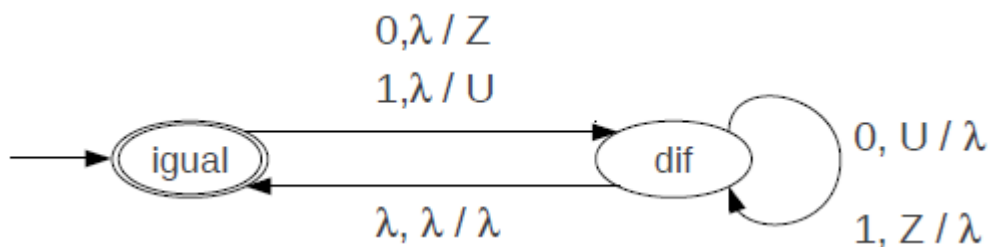
d) Um APD para  $\{0^m 1^n \mid m < n\}$

Um APD para  $\{0^m 1^n \mid m < n\}$ :

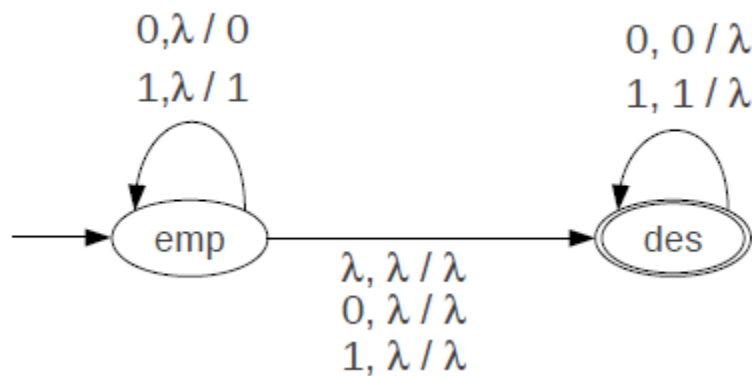


5. Construa APNs para reconhecer as seguintes linguagens:

a)  $\{w \in \{0,1\}^* \mid \text{o número de 0s em } w \text{ é igual ao número de 1s}\}$

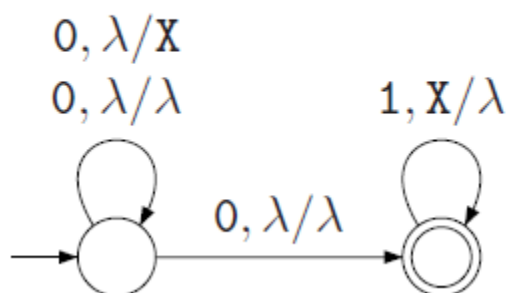


b)  $\{w \in \{0,1\}^* \mid w = w^r\}$



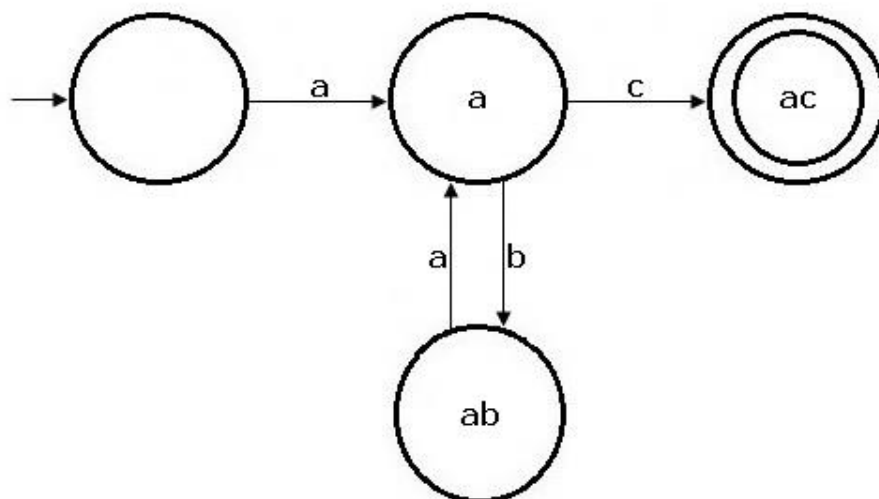
c)  $\{0^m 1^n \mid m > n\}$

APN para  $\{0^m 1^n \mid m > n\}$ :

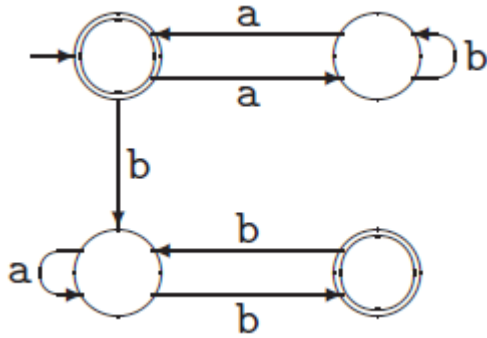


6. Construa AFD para cada uma das seguintes Expressões Regulares

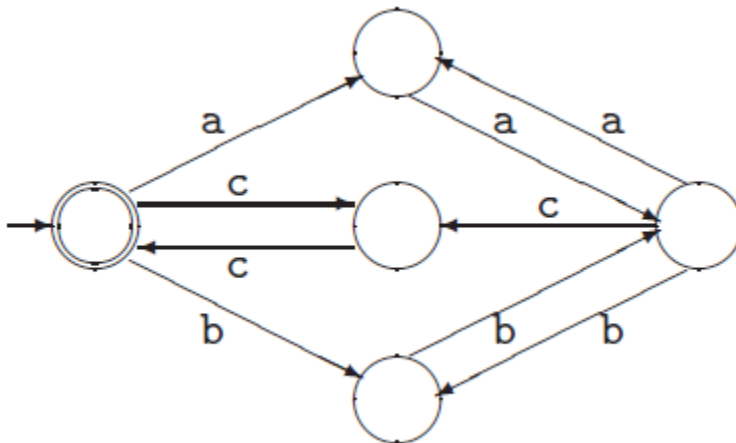
a)  $(ab)^*ac$



b)  $(ab^*a)^*(ba^*b)^*$



c)  $((aa+bb)^*cc)^*$



7. Escreva as expressões regulares para os seguintes conjuntos:

a)  $\{w \in \{a,b\}^* \mid |w| \geq 3\}$

AFD

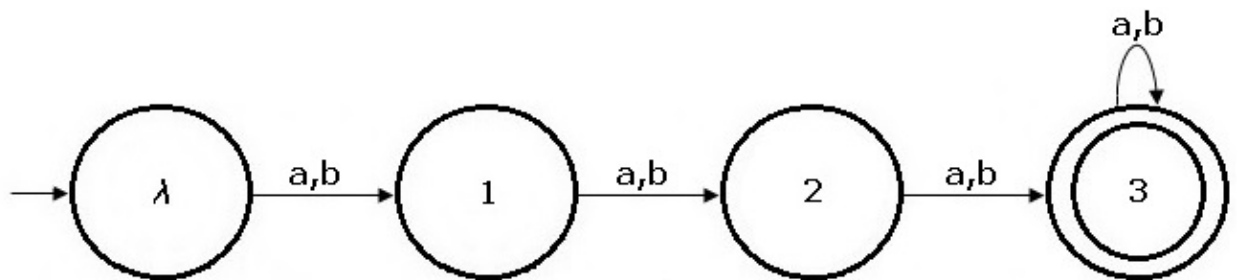
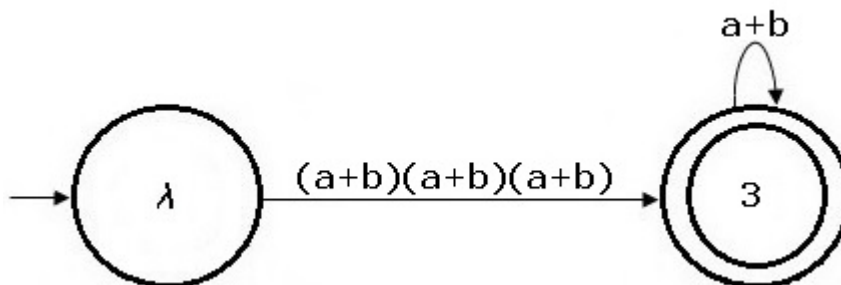


Diagrama de ER (Elimina-se os estados 1 e 2)



ER:  $(a + b)(a + b)(a + b)(a + b)^*$

b)  $\{w \in \{a,b\}^* \mid w \text{ começa com } a \text{ e tem tamanho par}\}$

AFD

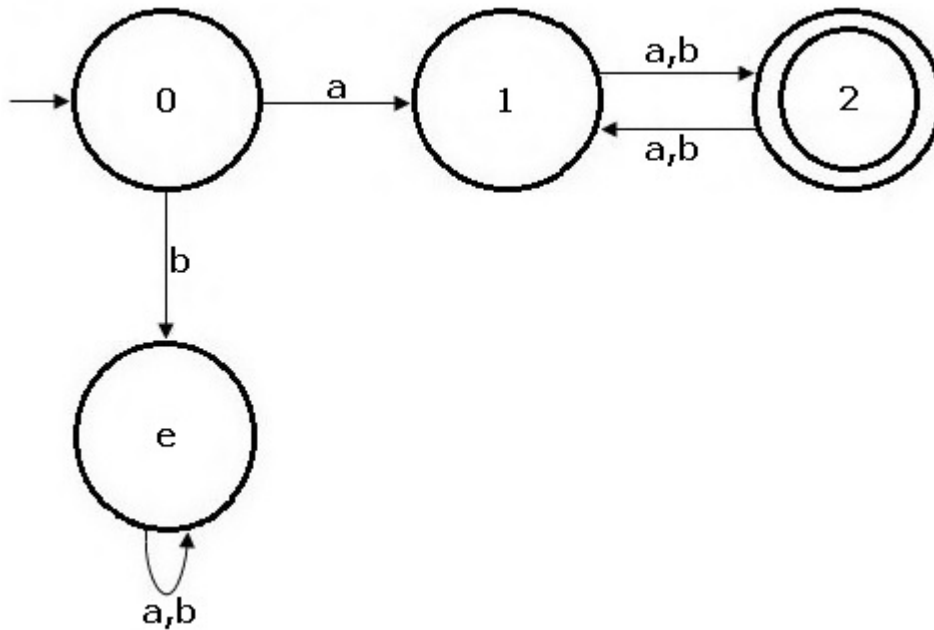
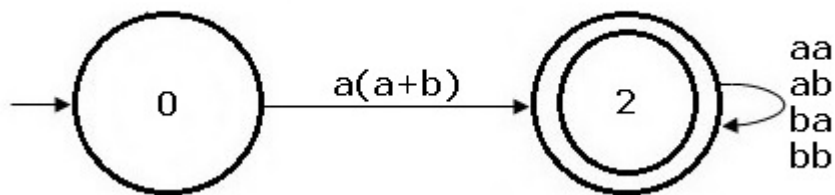


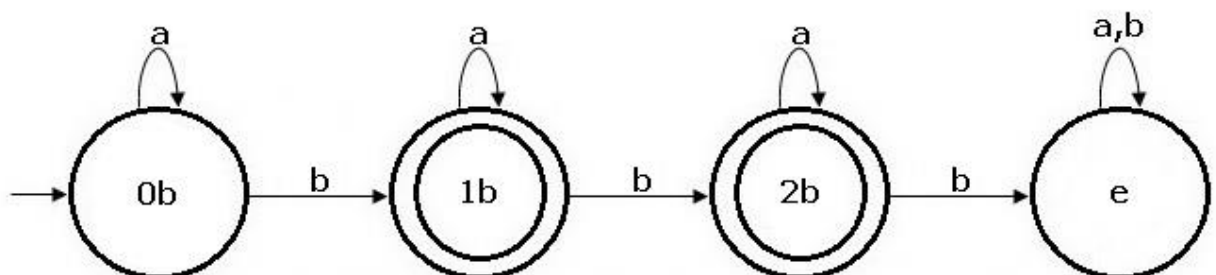
Diagrama de ER (Elimina-se o estado de erro e o estado 1)



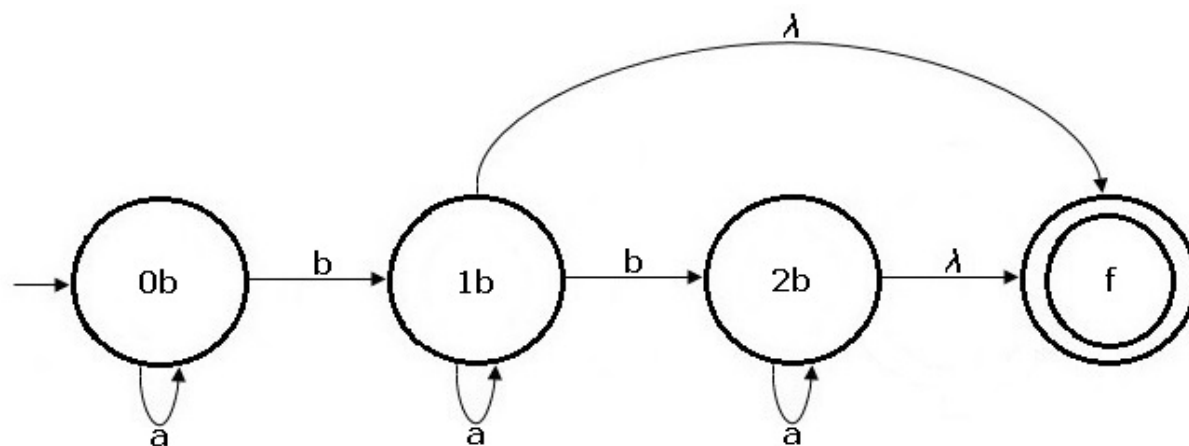
ER:  $a(a + b)(aa + ab + ba + bb)^*$

c)  $\{w \in \{a,b\}^* \mid w \text{ contém apenas um ou dois b's}\}$

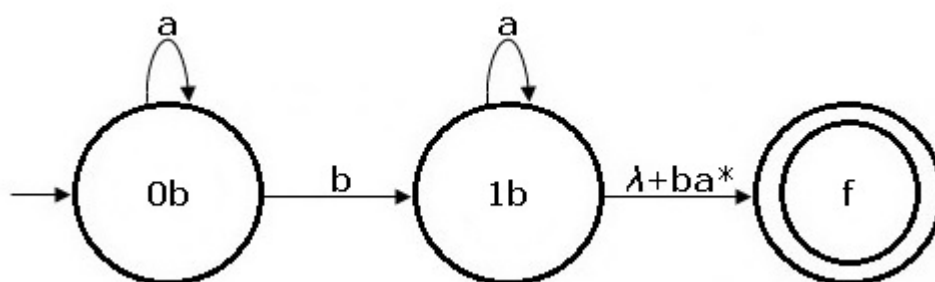
AFD



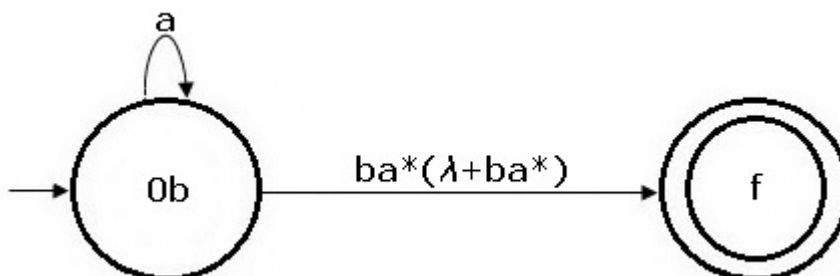
Adiciona-se um estado final único que recebe transições  $\lambda$



Elimina-se o estado 2b



Elimina-se o estado 1b



ER:  $a^*(ba^*(\lambda + ba^*))$