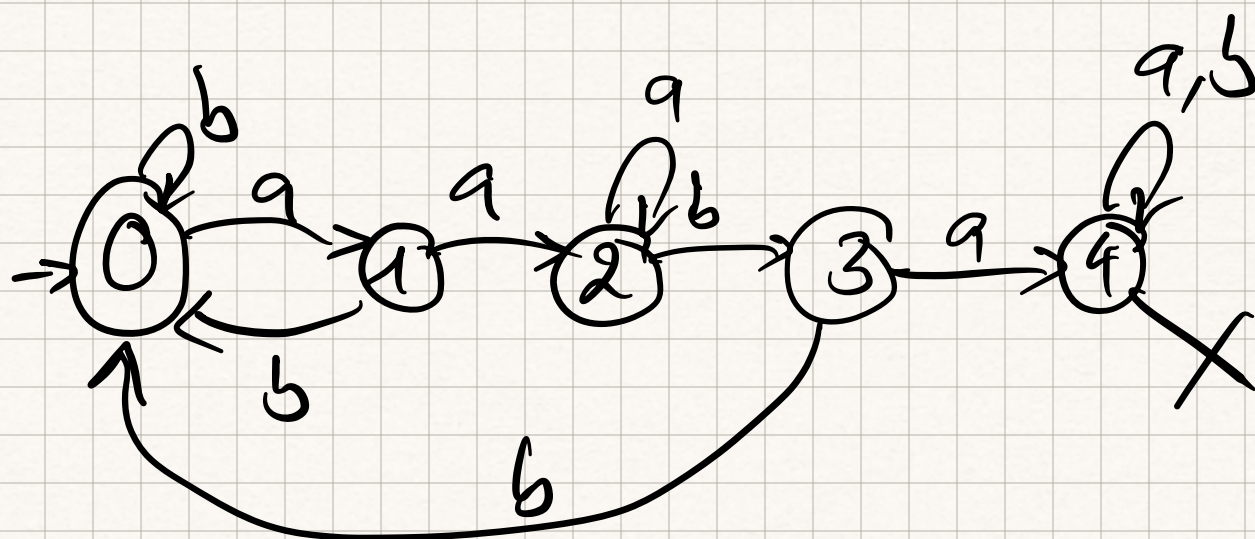


Ex 2



$$L_0 = bL_0 + aL_1$$

$$L_1 = aL_2 + bL_0$$

$$L_2 = aL_2 + bL_3$$

$$L_3 = bL_0 + aL_4$$

$$L_4 = (a+b)L_4 + \epsilon \quad L = aL + (b \dots)$$

$$L = a^*(b \dots)$$

$$\begin{cases} L_0 = b^* a L_1 \\ L_1 = a L_2 + b L_0 \\ L_2 = a^* b L_3 \end{cases}$$

$$L_3 = b L_0 + a (a + b)^*$$

$$L_4 = (a + b)^*$$

$$L_0 = b^* a a [a^* b [b L_0 + a (a + b)^*]] + b L_0$$

$$L_1 = a [a^* b [b L_0 + a (a + b)^*]] + b L_0$$

$$L_2 = a^* b [b L_0 + a (a + b)^*]$$

$$L_3 = \underline{\hspace{2cm}}$$

$$L_4 = \underline{\hspace{2cm}}$$

$$\begin{aligned}
 L_0 &= b^* a a [a^* b [b L_0 + a (a+b)^*] + b L_0 \\
 &= b^* a a [a^* b b L_0 + a^* b a (a+b)^*] + b L_0 \\
 &= b^* a a a^* b b L_0 + b^* a a a^* b a (a+b)^* + b L_0
 \end{aligned}$$

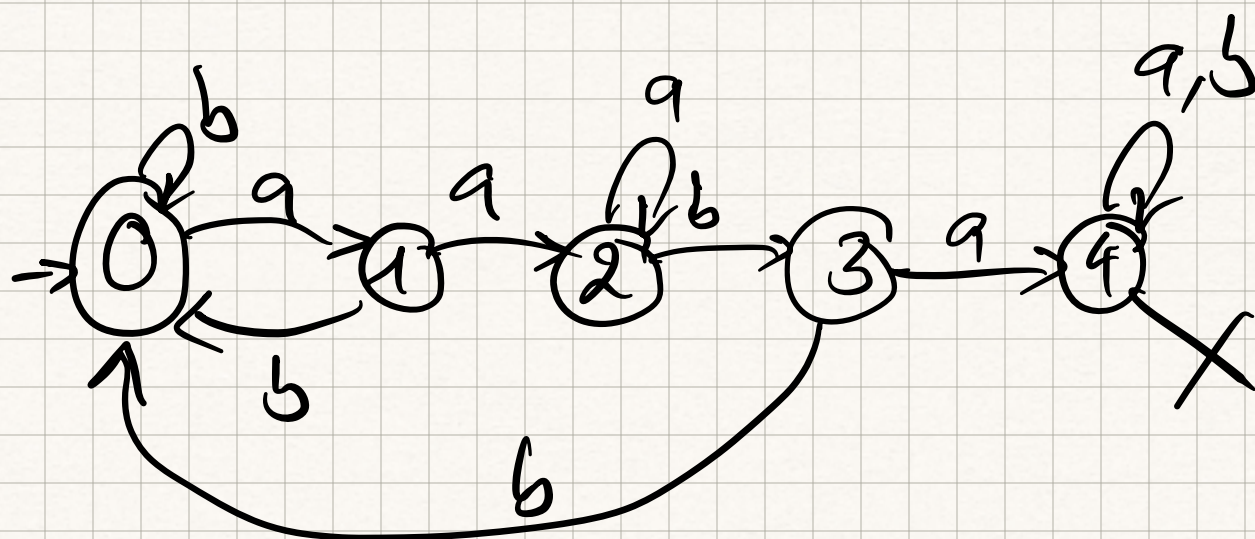
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Ex 2



$$h_0 = b h_0 + a h_1 \leftarrow$$

$$h_1 = a h_2 + b h_0$$

$$h_2 = a h_2 + b h_3 \swarrow$$

$$h_3 = b h_0 + a h_4$$

$$h_4 = (a+b) h_4 + \epsilon \quad L = aL + (b \dots)$$

$$L = a^* (b \dots)$$

$$L = aL + (b \dots)$$

$$L_2 = aL_2 + bL_3$$

$$\begin{cases} L_0 = b^* a L_1 \\ L_1 = a L_2 + b L_0 \\ L_2 = a^* b (L_3) \\ L_3 = \underline{b} L_0 + a(a+b)^* \\ L_4 = (a+b)^* \end{cases}$$

$$\begin{cases} L_0 = \\ L_2 = a^* b [b L_0 + a(a+b)^*] \\ L_3 = \\ L_4 = \end{cases}$$



$$L_0 = b^* a (a L_2 + b L_0)$$

$$L_2 = a^* b [b L_0 + a (a + b)^*]$$

$$L_0 = b^* a a (L_2) + b^* a b (L_0)$$

$$L_0 = (b^* a b)^* b^* a a (L_2)$$

$$L_2 = a^* b b L_0 + a^* b a (a + b)^*$$

$$(b + ab + aab^*bb)^* aab^*ba(a+b)^*$$



$$L_0 =$$

$$(b^*ab)^*b^* \underline{aaba^*bb} L_0$$

$$+ (b^*ab)^*b^* \underline{aaba^*ba(a+b)^*}$$

$$(b^*ab)^*b^* \left( \begin{array}{l} aaba^*bb L_0 \\ + aaba^*ba(a+b)^* \end{array} \right)$$



$$L = \underbrace{(a+b)^*}_{r_1} \underbrace{aaba(a+b)^*}_{r_2}$$

$$\begin{aligned} a^{-1}L &= a^{-1}(a+b)^*aaba(a+b)^* + a^{-1}aaba(a+b)^* \\ &= a^{-1}(a+b)(a+b)^*aaba(a+b)^* + aba(a+b)^* \\ &= \varepsilon + \emptyset + (a+b)^*aaba(a+b)^* + aba(a+b)^* \end{aligned}$$