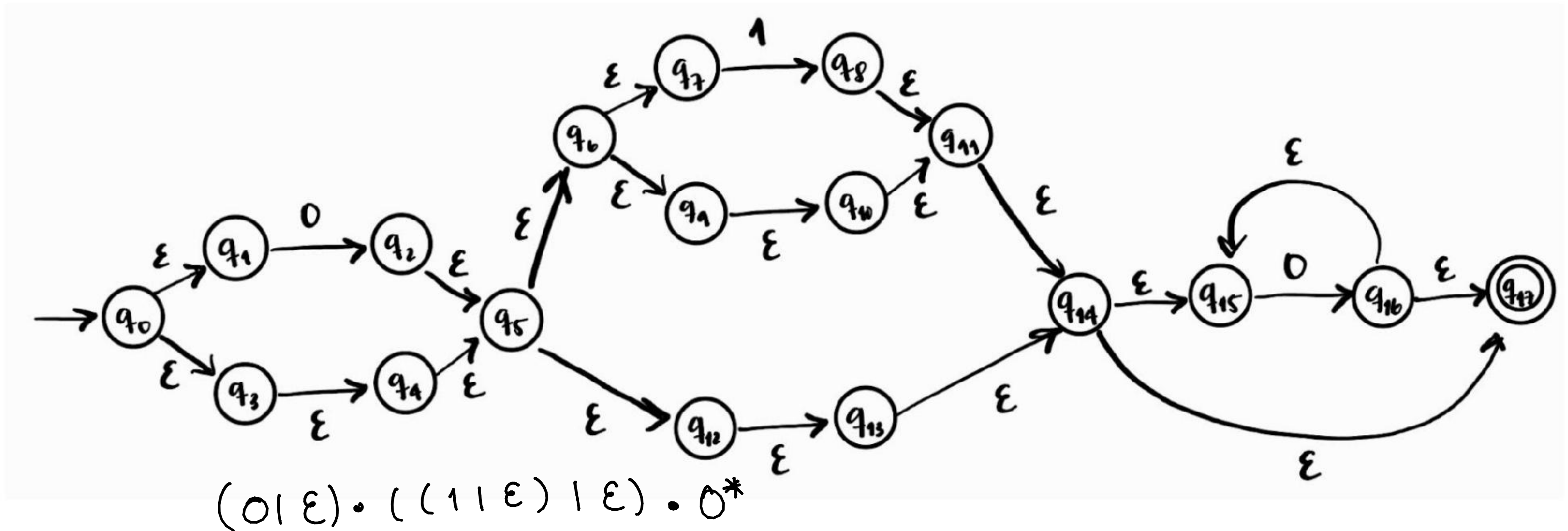


Ejercicio No. 2 (25%) – Utilice el Lema de Arden para encontrar el lenguaje generado por el siguiente Automata Finito, i.e., convierta el autómata a su correspondiente expresión regular utilizando el Lema de Arden y el algoritmo visto en clase. Deje todo su procedimiento.



Regla $B = Q + RP$
 $B = QP^*$

$$\begin{aligned} q_0 &= \epsilon \\ q_1 &= q_0 \epsilon \\ q_2 &= q_1 0 \\ q_3 &= q_0 \epsilon \\ q_4 &= q_3 \epsilon \\ q_5 &= q_2 \epsilon + q_4 \epsilon \\ q_9 &= q_5 \epsilon \\ q_7 &= q_9 \epsilon \\ q_8 &= q_7 1 \\ q_9 &= q_9 \epsilon \\ q_{10} &= q_9 \epsilon \\ q_{11} &= q_8 \epsilon + q_{10} \epsilon \\ q_{12} &= q_5 \epsilon \\ q_{13} &= q_{12} \epsilon \end{aligned}$$

$$\begin{aligned} q_{14} &= q_{11} \epsilon + q_{13} \epsilon \\ q_{15} &= q_{14} \epsilon + q_{16} \epsilon \\ q_{16} &= q_{15} 0 \\ q_{17} &= q_{16} \epsilon + q_{14} \epsilon \end{aligned}$$

$$\begin{aligned} q_0 &= \epsilon \\ q_1 &= \epsilon \epsilon = \epsilon \\ q_2 &= \epsilon 0 = 0 \\ q_3 &= \epsilon \epsilon = \epsilon \\ q_4 &= \epsilon \epsilon = \epsilon \\ q_5 &= 0 \epsilon + \epsilon \epsilon = 0 + \epsilon \\ q_6 &= (0 + \epsilon) \\ q_7 &= (0 + \epsilon) \end{aligned}$$

$$q_0 = (0 + \epsilon) 1$$

$$q_1 = (0 + \epsilon)$$

$$q_{10} = (0 + \epsilon)$$

$$q_{11} = (0 + \epsilon) 1 + (0 + \epsilon)$$

$$q_{12} = (0 + \epsilon)$$

$$q_{13} = (0 + \epsilon)$$

$$q_{14} = (0 + \epsilon) 1 + (0 + \epsilon) + (0 + \epsilon)$$

$$q_{15} = [(0 + \epsilon) 1 + (0 + \epsilon) + (0 + \epsilon)] + q_{16}$$

$$q_{16} = [(0 + \epsilon) 1 + (0 + \epsilon) + (0 + \epsilon)] + q_{17}$$

$$q_{14} = ((0 + \epsilon) 1 + (0 + \epsilon) + (0 + \epsilon)) \cdot 0^*$$

$$q_{17} = ((0 + \epsilon) 1 + (0 + \epsilon) + (0 + \epsilon)) \cdot 0^* \epsilon + (0 + \epsilon) 1 + (0 + \epsilon) + (0 + \epsilon)$$

$$q_{17} = [(0 + \epsilon) 1 + (0 + \epsilon) + (0 + \epsilon)] \cdot 0^*$$

$$r = [(0 + \epsilon) 1 + (0 + \epsilon) + (0 + \epsilon)] 0^*$$