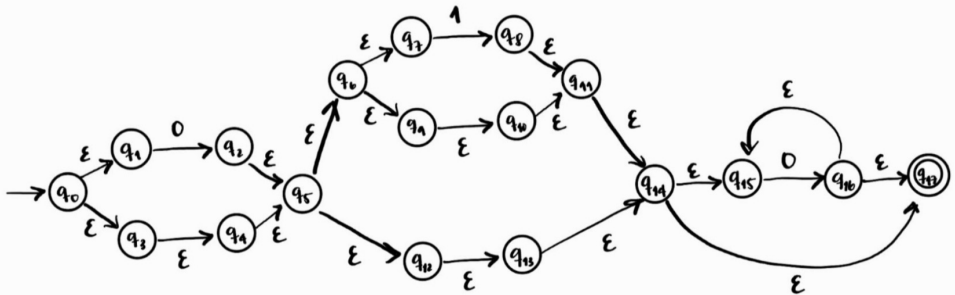


Laboratorio 3

Problema 2: 25%

Utilice el Lema de Arden para encontrar la expresión regular del siguiente autómata. Deje todo su procedimiento



$$q_0 = \epsilon q_1 \mid \epsilon q_3$$

$$q_1 = 0 q_2$$

$$q_2 = \epsilon q_6$$

$$q_3 = \epsilon q_4$$

$$q_4 = \epsilon q_5$$

$$q_5 = \epsilon q_6 \mid \epsilon q_{12}$$

$$q_6 = \epsilon q_7 \mid \epsilon q_9$$

$$q_7 = 1 q_8$$

$$q_8 = \epsilon q_{11}$$

$$q_9 = \epsilon q_{10}$$

$$q_{10} = \epsilon q_{11}$$

$$q_{11} = \epsilon q_{14}$$

$$q_{12} = \epsilon q_{13}$$

$$q_{13} = \epsilon q_{14}$$

$$q_{14} = \epsilon q_{15} \mid \epsilon q_{17}$$

$$q_{15} = 0 q_{16}$$

$$q_{16} = \epsilon q_{15} \mid \epsilon q_{17}$$

$$q_{17} = \epsilon$$

$$R_{17} = \epsilon$$

$$R_{16} = \epsilon R_{15} \mid \epsilon R_{17} = R_{15} \mid \epsilon$$

$$R_{15} = 0 R_{16}$$

$$R_{16} = R_{15} \mid \epsilon = 0 R_{16} \mid \epsilon$$

$$R_{16} = (0)^*$$

$$R_{13} = 0 R_{16} = 0(0)^*$$

$$R_{12} = \epsilon R_{13} = 0(0)^*$$

$$R_{14} = \epsilon R_{15} \mid \epsilon R_{17} = R_{15} \mid R_{17} = 0 R_{16} \mid \epsilon = 0(0)^* \mid \epsilon$$

$$R_{14} = 0(0)^* \mid \epsilon$$

$$R_{11} = \epsilon R_{14} = 0(0)^* \mid \epsilon$$

$$R_{10} = \epsilon R_{11} = 0(0)^* \mid \epsilon$$

$$R_9 = \epsilon R_{10} = 0(0)^* \mid \epsilon$$

$$R_8 = \epsilon R_{11} = 0(0)^* \mid \epsilon$$

$$R_7 = 1 R_8 = 1(0(0)^* \mid \epsilon)$$

$$R_6 = \epsilon R_7 \mid \epsilon R_9 = R_7 \mid R_9 = 1(0(0)^* \mid \epsilon) \mid 0(0)^* \mid \epsilon$$

$$R_5 = \epsilon R_6 \mid \epsilon R_{12} = R_6 \mid R_{12} = [1(0(0)^* \mid \epsilon) \mid 0(0)^* \mid \epsilon] \mid 0(0)^*$$

$$R_2 = \epsilon R_5 = R_5$$

$$R_1 = 0 R_2 = 0 R_5$$

$$R_0 = \epsilon R_1 \mid \epsilon R_2 = R_1 \mid R_2 = 0 R_5 \mid R_5$$

$$R_0 = (0 \mid \epsilon) [1(0(0)^* \mid \epsilon) \mid (0(0)^* \mid \epsilon) \mid 0(0)^*]$$

$$(0 \mid \epsilon) [1(0(0)^* \mid \epsilon) \mid (0(0)^* \mid \epsilon) \mid 0(0)^*]$$