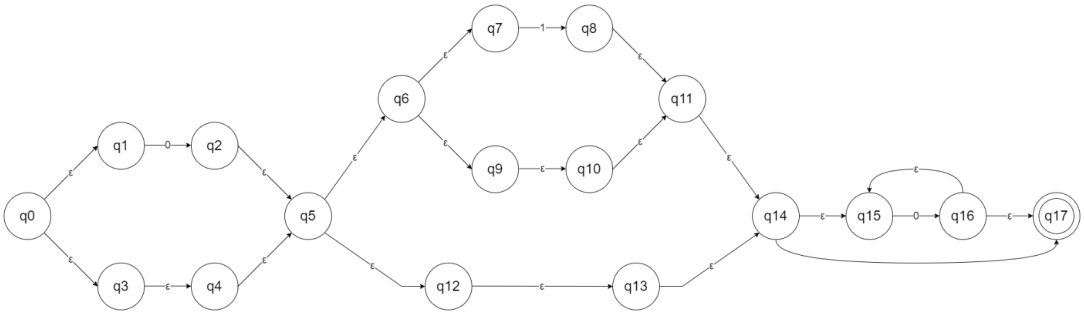
Ejercicio 2

Utilice el Lema de Arden para encontrar el lenguaje generado por el siguiente Autómata 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.



$q_0 = \varepsilon$

$q_1 = q_0\varepsilon = \varepsilon$

$q_2 = q_1 0 = 0$

$q_3 = q_0 \varepsilon = \varepsilon$

$q_4 = q_3 \varepsilon = \varepsilon$

$q_5 = q_2\varepsilon + q_4\varepsilon = 0 + \varepsilon$

$q_6 = q_5 \varepsilon = (0+\varepsilon)\varepsilon = 0 + \varepsilon$

$q_7 = q_6 \varepsilon = (0+\varepsilon)\varepsilon = 0 + \varepsilon$

$q_8 = q_7 1 = (0+\varepsilon)1$

$q_9 = q_6 \varepsilon = (0+\varepsilon)\varepsilon = 0 + \varepsilon$

$q_{10} = q_9 \varepsilon = (0+\varepsilon)\varepsilon = 0 + \varepsilon$

$q_{11} = q_8\varepsilon + q_{10}\varepsilon = (0+\varepsilon)1\varepsilon + (0+\varepsilon)\varepsilon = (0+\varepsilon)(1\varepsilon+\varepsilon) = (0+\varepsilon)(1+\varepsilon)$

$q_{12} = q_5 \varepsilon = (0+\varepsilon)\varepsilon = 0+\varepsilon$

$q_{13} = q_{12}\varepsilon = (0+\varepsilon)\varepsilon = 0+\varepsilon$

$q_{14} = q_{11}\varepsilon + q_{13}\varepsilon = (0+\varepsilon)(1+\varepsilon)\varepsilon + (0+\varepsilon)\varepsilon = (0+\varepsilon)\big((1+\varepsilon)\varepsilon + \varepsilon\big) = (0+\varepsilon)((1+\varepsilon)+\varepsilon)$

$q_{15} = q_{14}\varepsilon + q_{16}\varepsilon = (0+\varepsilon)((1+\varepsilon)+\varepsilon)\varepsilon + q_{16}\varepsilon$

$q_{16} = q_{15}0 = \big((0+\varepsilon)((1+\varepsilon)+\varepsilon)\varepsilon + q_{16}\varepsilon\big)0 = (0+\varepsilon)((1+\varepsilon)+\varepsilon)0\varepsilon + q_{16}0\varepsilon$

$= (0+\varepsilon)((1+\varepsilon)+\varepsilon)00^* = (0+\varepsilon)((1+\varepsilon)+\varepsilon)0^+$

$q_{17} = q_{14}\varepsilon + q_{16}\varepsilon = (0+\varepsilon)((1+\varepsilon)+\varepsilon)\varepsilon + (0+\varepsilon)((1+\varepsilon)+\varepsilon)0^+\varepsilon$

$= (0+\varepsilon)((1+\varepsilon)+\varepsilon)(\varepsilon + 0^+)$

$\varepsilon + 0^+ = 0^+$?

$R_F = (0+\varepsilon)((1+\varepsilon)+\varepsilon)(\varepsilon+0^+) = (0|\varepsilon)((1|\varepsilon)|\varepsilon)(0^+?)$