

Reiknirit, rökfræði og reiknanleiki

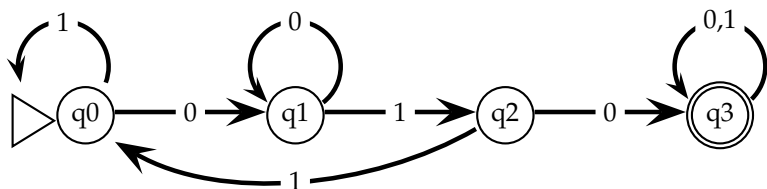
Magni Þór Birgisson

skil 2

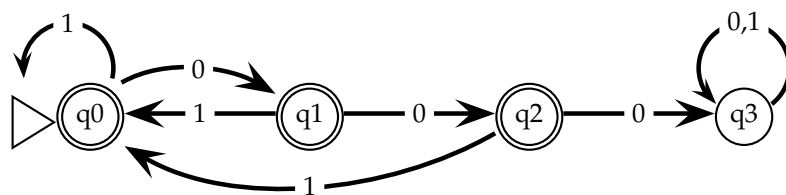
1 Exercise 3.4 p. 86

$$\Sigma = \{0,1\};$$

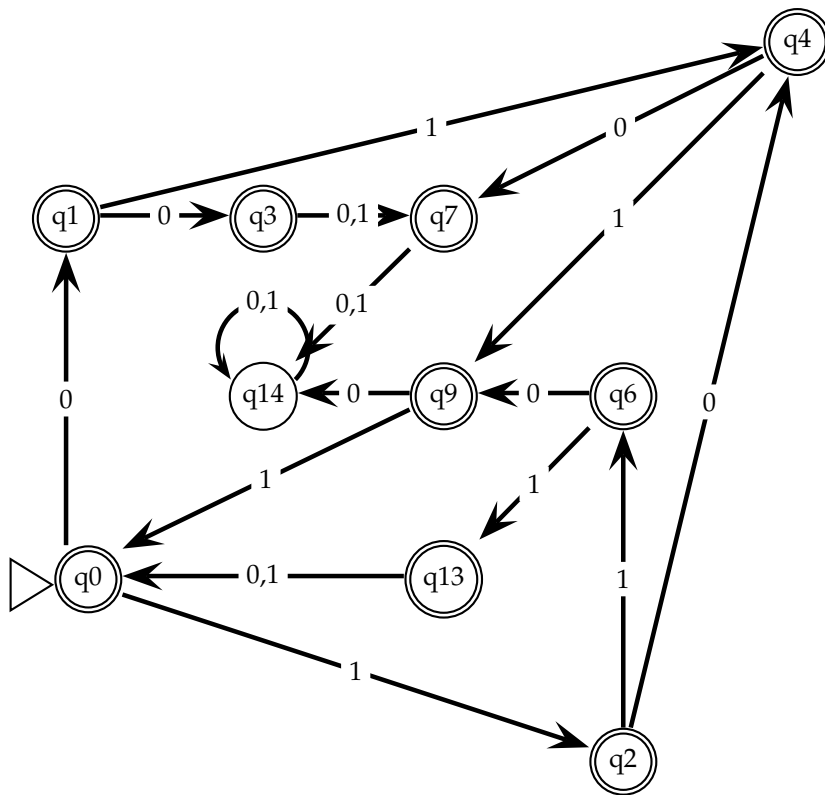
1) $\Sigma^* 010 \Sigma^*$



2) $\text{not}(\Sigma^* 000 \Sigma^*)$

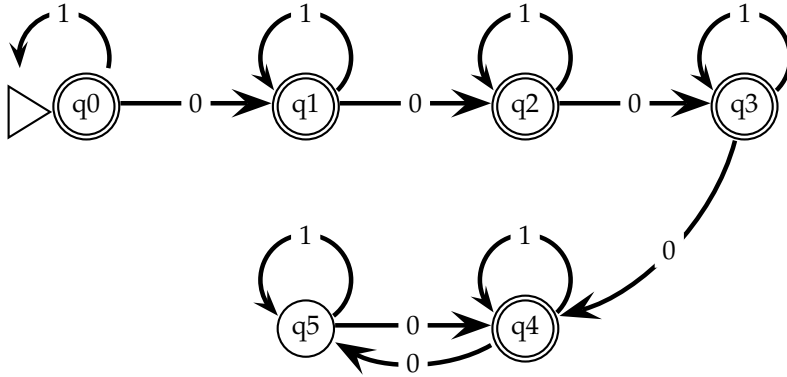


3) hver 4 stata bútur verður að hafa 3 af 1



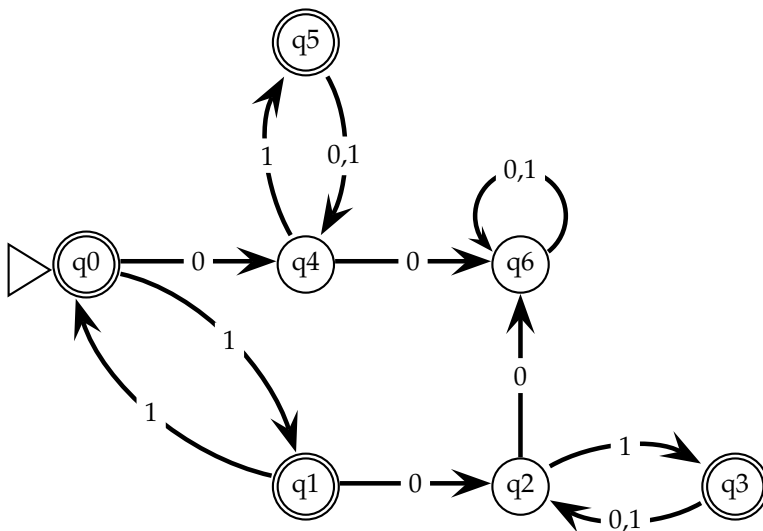
4)

fjöldi af 0 $\begin{cases} \text{oddatala} & \leq 2 \\ \text{sléttala} & \aleph \end{cases}$



5)

fjöldi stafa $\begin{cases} \text{oddatala} & (1_)* \\ \text{sléttala} & (_1)* \end{cases}$

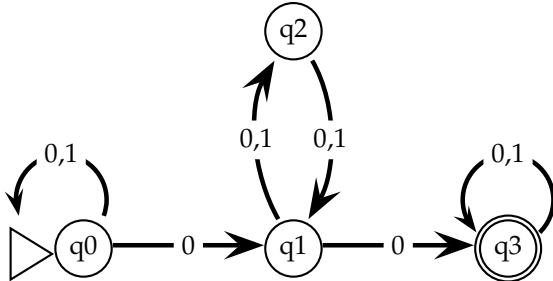


2 Exercise 3.9 p. 87

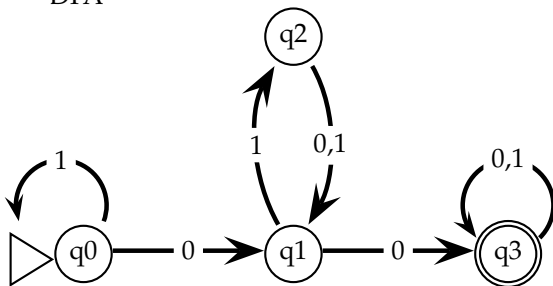
$$\Sigma = \{0, 1\};$$

1) $\Sigma^* 0 (\Sigma \Sigma)^* 0 \Sigma^*$

NFA

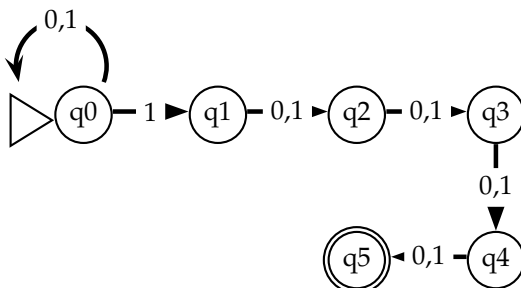


DFA



2) $\Sigma^* 1 \Sigma \Sigma \Sigma \Sigma$

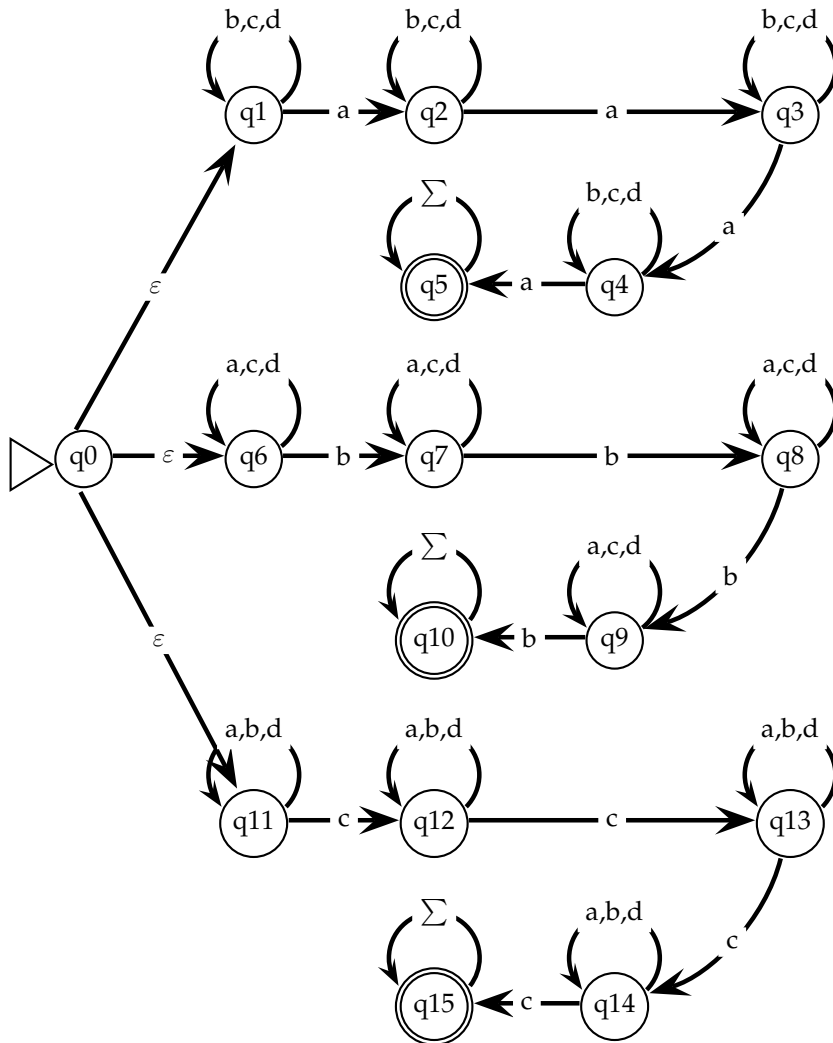
NFA



DFA

$1 + 2 + 2^2 + 2^3 + 2^4 = 31$ stöður. Þetta mun líta út sem flott tré en seinustu laufin munu vera endastöður og tengjast svo inn í tréð ($2^5 = 32$) örvar.

3)
NFA



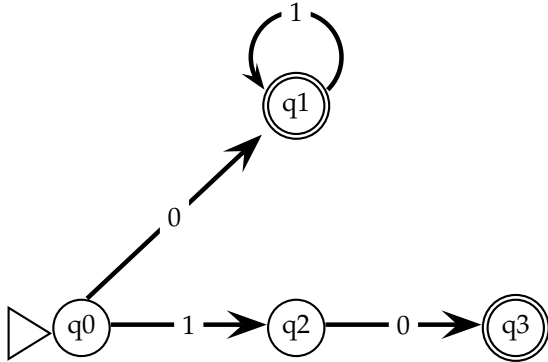
DFA

$$1 + \underbrace{6}_{\text{level 1}} + \underbrace{6 * 2}_{\text{level 2}} + \underbrace{6 * 3}_{\text{level 3}} + \underbrace{6 * 4}_{\text{level 4}} + \underbrace{3}_{\text{endastöður}} = 64 \text{ stöður.}$$

Allar stöðurnar tengjast sjálfum sér með {d}

3 Reverse

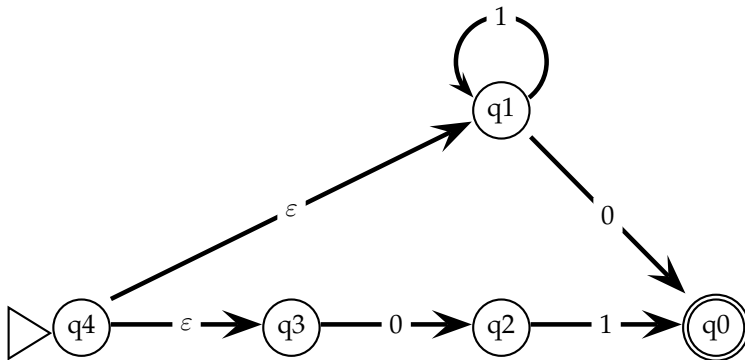
$$L = ((0 \circ (1^*)) \cup (1 \circ 0))$$



Örvunum snúið við.
Byrjunar stöð verða enda stöð.
Enda staðir verða byrjunar staðir.

$$L = ((0 \circ (1^*)) \cup (1 \circ 0))$$

$$L^R = (((1^*) \circ 0) \cup (0 \circ 1))$$



Síðan er (NFA = DFA) og því er bara að varpa henni yfir í DFA