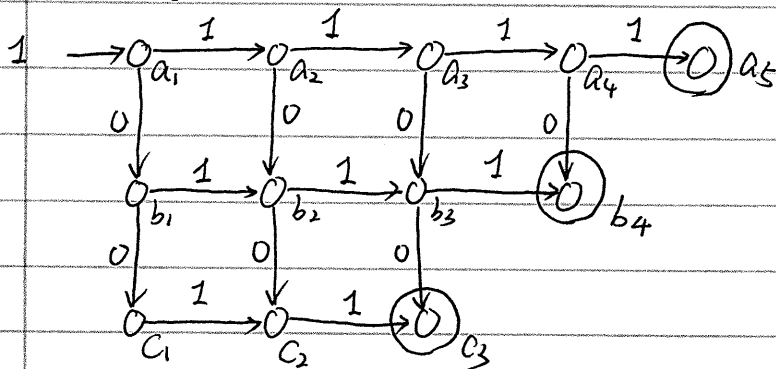


Exercise 2.



$$Q = \{a_1, a_2, a_3, a_4, a_5, b_1, b_2, b_3, b_4, c_1, c_2, c_3\}$$

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

$$\delta: \delta(a_1, 1) = a_2 \quad \delta(a_1, 0) = b_1 \quad \delta(a_2, 1) = a_3 \quad \delta(a_2, 0) = b_2$$

$$\delta(a_3, 1) = a_4 \quad \delta(a_3, 0) = b_3 \quad \delta(a_4, 1) = a_5 \quad \delta(a_4, 0) = b_4$$

$$\delta(b_1, 1) = b_2 \quad \delta(b_1, 0) = c_1 \quad \delta(b_2, 1) = b_3 \quad \delta(b_2, 0) = c_2$$

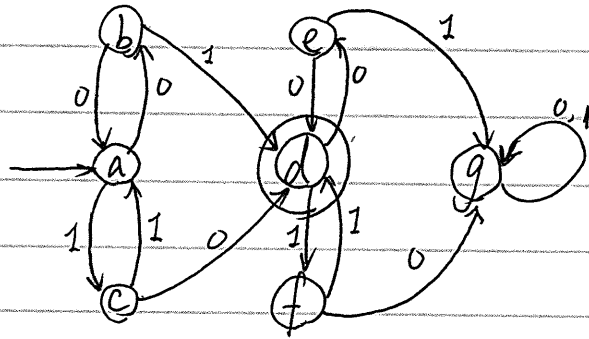
$$\delta(b_3, 1) = b_4 \quad \delta(b_3, 0) = c_3$$

$$\delta(c_1, 1) = c_2 \quad \delta(c_2, 1) = c_3$$

$$q_0 = a_1$$

$$F = \{a_5, b_4, c_3\}$$

2.



$$Q = \{a, b, c, d, e, f, g\}$$

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

$$\delta: \delta(a, 0) = b \quad \delta(a, 1) = c \quad \delta(b, 0) = a \quad \delta(b, 1) = d$$

$$\delta(c, 0) = d \quad \delta(c, 1) = a \quad \delta(d, 1) = f \quad \delta(d, 0) = e$$

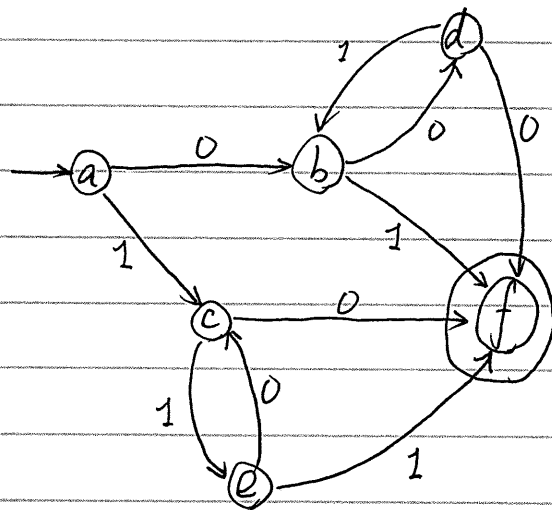
$$\delta(e, 0) = d \quad \delta(e, 1) = g \quad \delta(f, 0) = g \quad \delta(f, 1) = d$$

$$\delta(g, 0) = g \quad \delta(g, 1) = g$$

$$q_0 = s = a$$

$$F = \{d\}$$

3



$$Q = \{a, b, c, d, e, f\}$$

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

$$\delta: \delta(a, 0) = b \quad \delta(a, 1) = c \quad \delta(b, 0) = d \quad \delta(b, 1) = f$$

$$\delta(c, 1) = e \quad \delta(c, 0) = f \quad \delta(d, 0) = f \quad \delta(d, 1) = b$$

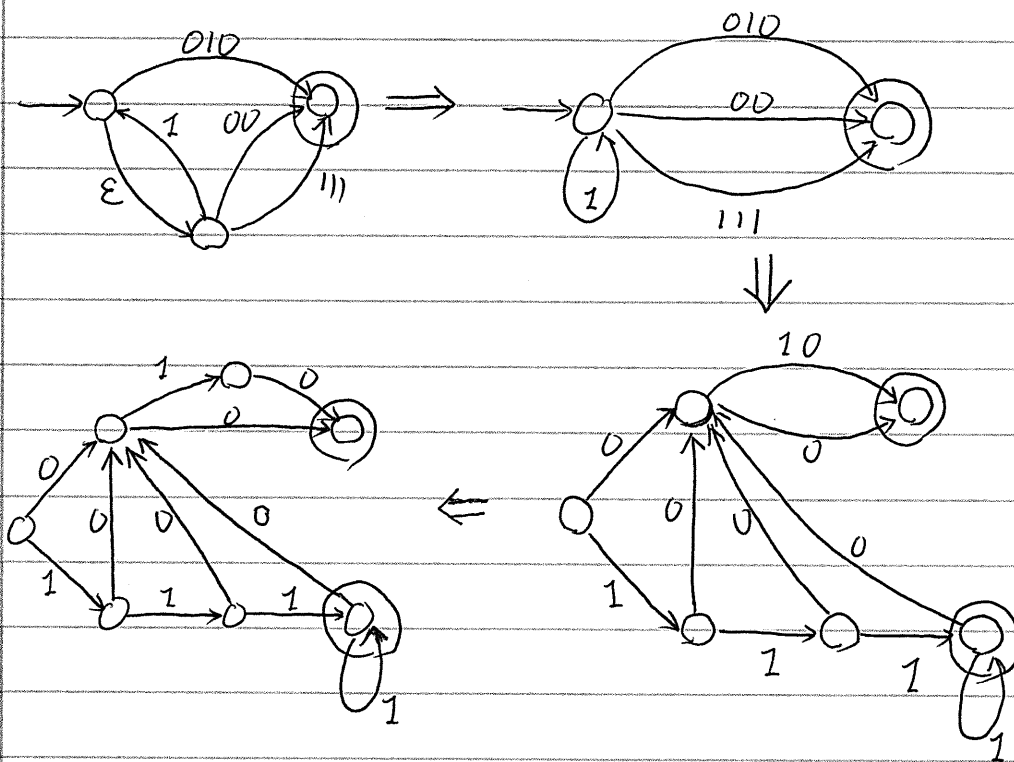
$$\delta(e, 0) = c \quad \delta(e, 1) = f$$

$$q_0 = a$$

$$F = \{f\}$$

$$4 \quad (aa)^*a(b^*) + (bb)^*b(a^*)$$

Exercise 3



$$L = \{(1^*)111, (1^*)010, (1^*)00\}$$