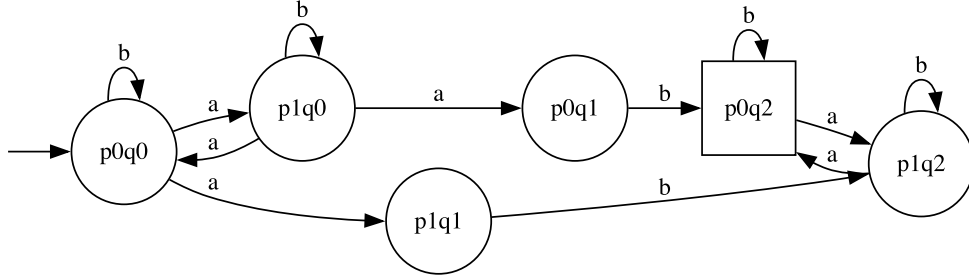


Exercise 1

- Group 1: a, c, d, g, i, j, k
- Group 2: b, e, f, h

Exercise 2



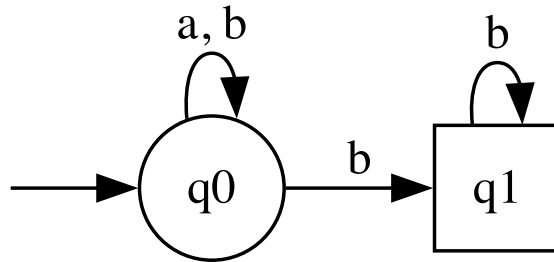
Exercise 3

Language L_1

Part A

$$L_1 = \{x_0x_1... \mid (\forall^\infty i \in N_0 . x_i \in \Sigma) \wedge (\exists i \in N_0 . x_i = a)\}$$

Part B



Part C

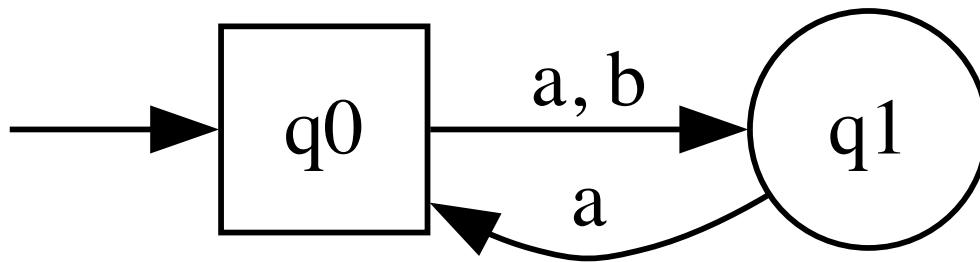
$$\begin{aligned} L_1 &= (Q_1, \Sigma, \delta_1, Q_1^{\text{init}}, F_1) \\ Q_1 &= \{q_0, q_1\} \\ \Sigma &= \{a, b\} \\ Q_1^{\text{init}} &= \{q_0\} \\ F_1 &= \{q_1\} \\ \delta_1 &= \{(q_0, a, q_0), (q_0, b, q_0), (q_0, b, q_1), (q_1, b, q_1)\} \end{aligned}$$

Language L_2

Part A

$$L_2 = \{x_0x_1... \mid (\forall i \in N_0 . x_i \in \Sigma) \wedge (\forall^\infty i \in N_0 . i \bmod 2 = 1 . x_i = a)\}$$

Part B



Part C

$$L_2 = (Q_2, \Sigma, \delta_2, Q_2^{\text{init}}, F_2)$$

$$Q_2 = \{q_0, q_1\}$$

$$\Sigma = \{a, b\}$$

$$Q_2^{\text{init}} = \{q_0\}$$

$$F_2 = \{q_1\}$$

$$\delta_2 = \{(q_0, a, q_1), (q_0, b, q_1), (q_1, a, q_0)\}$$