## Exercise 1 — **2/3**

- Group 1: a, ~~c~~ d, g, i, j, k, **f  −0.5**
- Group 2: b, e, ~~f~~ h , **c  −0.5**

## Exercise 2 — **4/4**



**P₀, q₀**  →  $p_0, q_0$  ✓
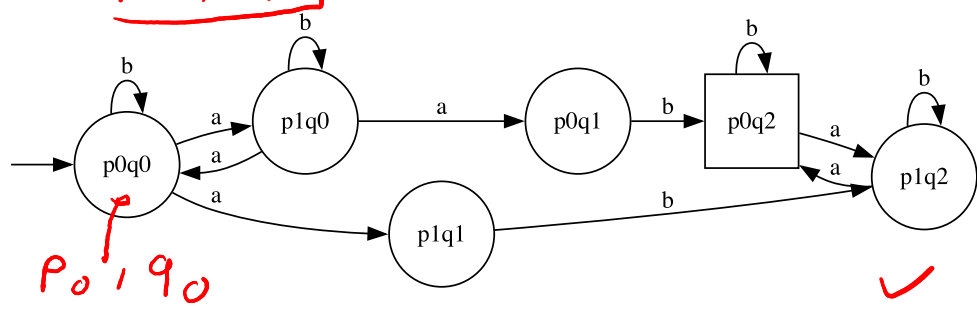
## Exercise 3 — **7/9**

**Language $L_1$**     (a) **1/3**   (b) **3/3**   (c) **3/3**

### Part A

$$L_1 = \left\{ x_0 x_1 ... \mid \left( \forall^\infty i \in N_0 \,.\, x_i \in \sum \right) \wedge \left( \exists i \in N_0 \,.\, x_i = a \right) \right\}\ f$$

### Part B



✓
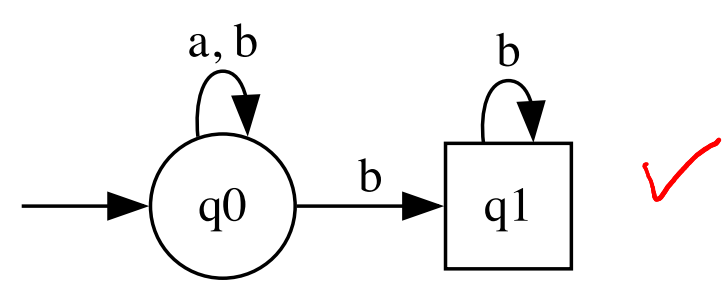
### Part C

$$L_1 = \left( Q_1, \sum, \delta_1, Q_1^{\text{init}}, F_1 \right)$$
$$Q_1 = \{ q_0, q_1 \}$$
$$\sum = \{ a, b \}$$
$$Q_1^{\text{init}} = \{ q_0 \}$$
$$F_1 = \{ q_1 \}$$
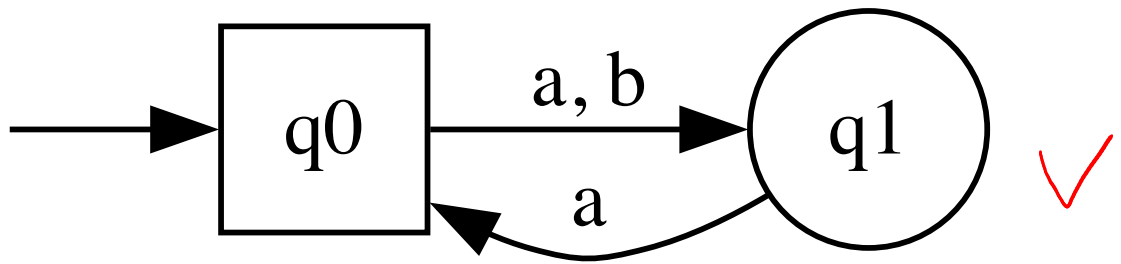$$\delta_1 = \{ (q_0, a, q_0), (q_0, b, q_0), (q_0, b, q_1), (q_1, b, q_1) \}$$

✓

## Language $L_2$

### Part A

$$L_2 = \left\{ x_0 x_1 ... \mid \left( \forall i \in N_0 \,.\, x_i \in \sum \right) \wedge \left( \forall^\infty i \in N_0 \,.\, i \bmod 2 = 1 \to x_i = a \right) \right\}\ \ \mathbf{-0.5}$$

$\overset{\infty}{\forall} i :$ "for all but finitely many i"

### Part B

**Part C**

$$L_2 = \left(Q_2, \sum, \delta_2, Q_2^{\text{init}}, F_2\right)$$

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

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

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

$$F_2 = \{q_0\}$$

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