

HW 02

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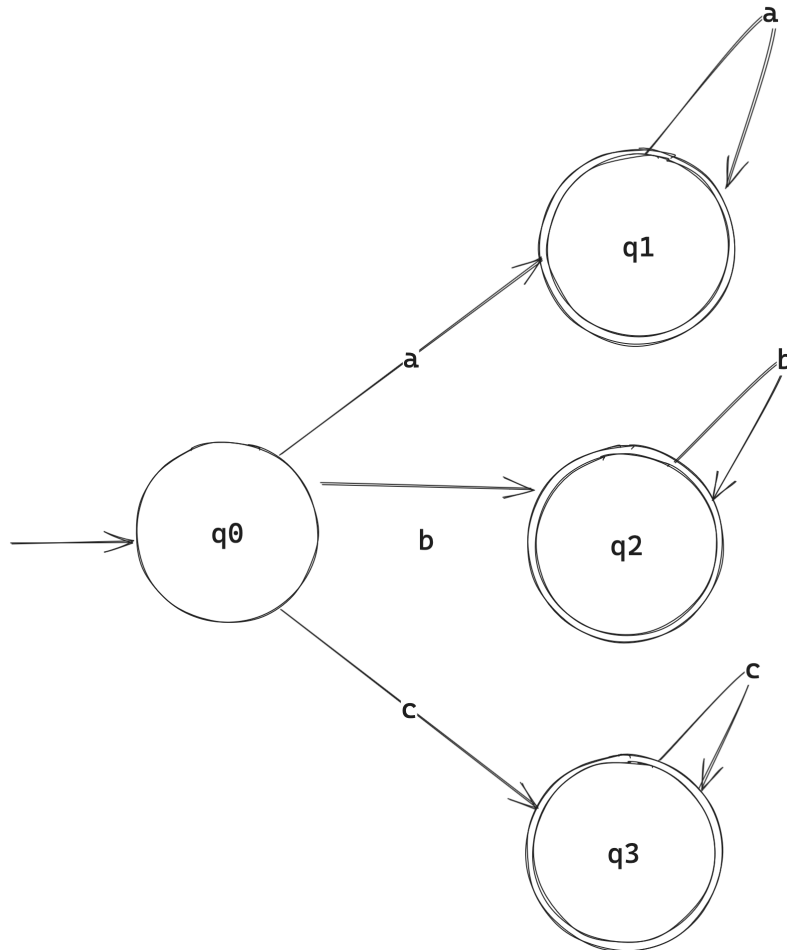
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1 Problem 1

1.1 Part 1

$$L(M) = \{x|x \in \{a\}^*\} \cup \{x|x \in \{b\}^*\} \cup \{x|x \in \{c\}^*\}$$

1.2 Part 2



$$Q = q_0, q_1, q_2, q_3$$

$$\Sigma = a, b, c$$

$$F = q_1, q_2, q_3$$

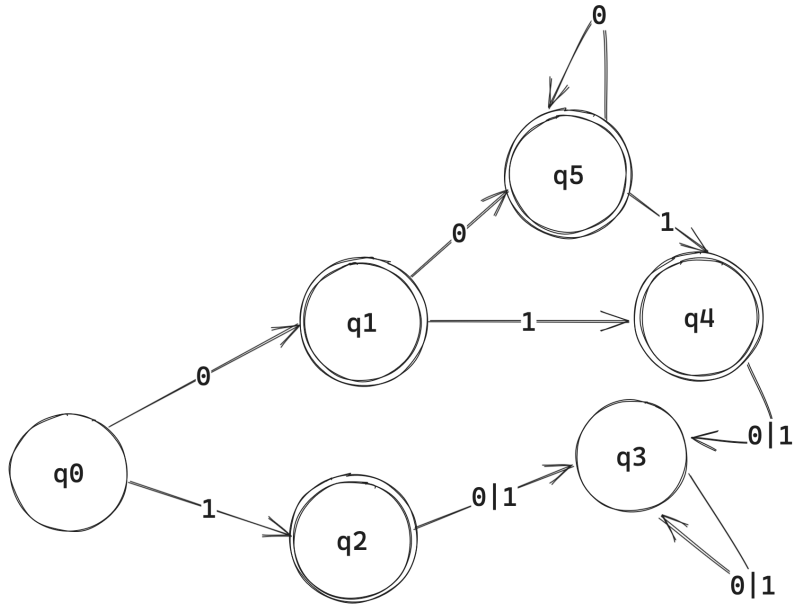
$$\delta(q_0, a) = q_1, \delta(q_1, a) = q_1, \delta(q_0, b) = q_2, \delta(q_2, b) = q_2, \delta(q_0, c) = q_3, \delta(q_3, c) = q_3$$

2 Problem 2

2.1 Work

subset	0	1
$\{q_0\}$	$\{q_0, q_1\}$	$\{q_1\}$
$\{q_1\}$	$\{q_2\}$	$\{q_2\}$
$\{q_2\}$	$\{q_2\}$	$\{q_2\}$
$\{q_0, q_1\}$	$\{q_0, q_1\} \cup \{q_2\}$	$\{q_1\} \cup \{q_2\}$
$\{q_0, q_1, q_2\}$	$\{q_0, q_1\} \cup \{q_2\} \cup \{q_2\}$	$\{q_1\} \cup \{q_2\} \cup \{q_2\}$
$\{q_1, q_2\}$	$\{q_2\} \cup \{q_2\}$	$\{q_2\} \cup \{q_2\}$

2.2 Solution



$$Q_D = \{q_0, q_1, q_2, q_3, q_4, q_5\}$$

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

$$F_D = \{q_1, q_2, q_4, q_5\}$$

$$\delta_D(q_0, 0) = q_1$$

$$\delta_D(q_0, 1) = q_2$$

$$\delta_D(q_1, 0) = q_5$$

$$\delta_D(q_1, 1) = q_4$$

$$\delta_D(q_2, 0) = \delta_D(q_2, 1) = q_3$$

$$\delta_D(q_3, 0) = \delta_D(q_3, 1) = q_3$$

$$\delta_D(q_4, 0) = \delta_D(q_4, 1) = q_4$$

$$\delta_D(q_5, 0) = q_5$$

$$\delta_D(q_5, 1) = q_4$$

3 Problem 3

See attached python