# Assignment 1

## Automata & Theory of Computation

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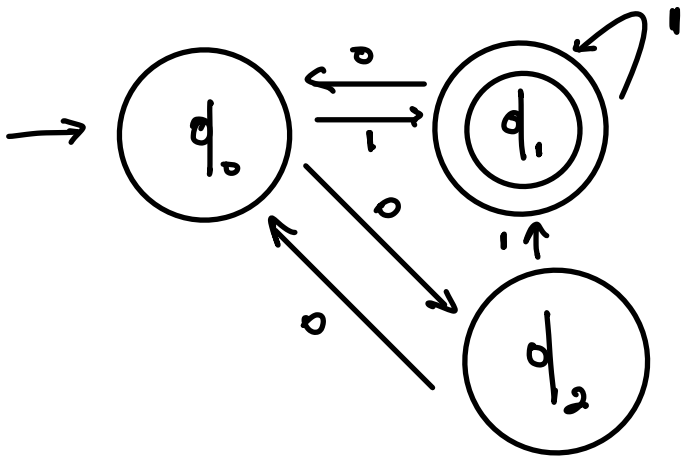
1-1. Draw the transition graph that represents the following dfa

$$M = (\{q_0, q_1, q_2\}, \{0, 1\}, \delta, q_0, \{q_1\}),$$

where $\delta$ is given by

$$\delta(q_0, 0) = q_2, \quad \delta(q_0, 1) = q_1,$$
$$\delta(q_1, 0) = q_0, \quad \delta(q_1, 1) = q_1,$$
$$\delta(q_2, 0) = q_0, \quad \delta(q_2, 1) = q_1.$$



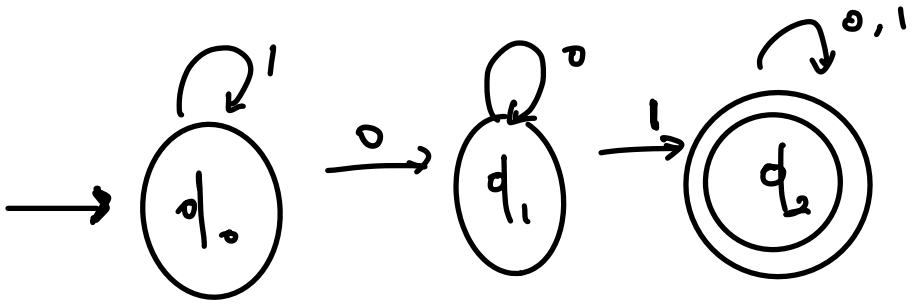

1-2. Show the accepted strings among 00, 01, 10, 11.

1. 00 : $q_0 \to q_2 \to q_0$ not accepted
2. 01 : $q_0 \to q_2 \to q_1$ accepted
3. 10 : $q_0 \to q_1 \to q_0$ not accepted
4. 11 : $q_0 \to q_1 \to q_1$ accepted

01, 11

2. Find a dfa that accepts all the strings on {0, 1}, except those containing the substring 01.

$M = (\{q_0, q_1, q_2\}, \{0, 1\}, \delta, q_0, \{q_2\})$




$\delta(q_0, 0) = q_1$ $\quad$ $\delta(q_0, 1) = q_1$

$\delta(q_1, 0) = q_1$ $\quad$ $\delta(q_1, 1) = q_2$

$\delta(q_2, 0) = q_2$ $\quad$ $\delta(q_2, 1) = q_2$