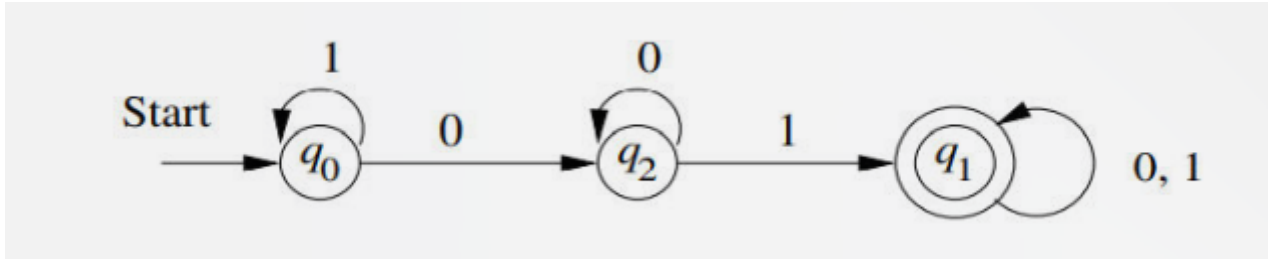


Unit 2

Extended Transition Function of DFA(Assignment-2)

Question



- Compute $\hat{\delta}(q_0, 1001)$
- Compute $\hat{\delta}(q_0, 100)$

Answer:

a. $\hat{\delta}(q_0, 1001)$

$$\hat{\delta}(q_0, \epsilon) = q_0$$

$$\hat{\delta}(q_0, 1) = \delta(\hat{\delta}(q_0, \epsilon), 1) = q_0$$

$$\hat{\delta}(q_0, 10) = \delta(\hat{\delta}(q_0, 1), 0) = \delta(q_0, 0) = q_2$$

$$\hat{\delta}(q_0, 100) = \delta(\hat{\delta}(q_0, 10), 0) = \delta(q_2, 0) = q_2$$

$$\hat{\delta}(q_0, 1001) = \delta(\hat{\delta}(q_0, 100), 1) = \delta(q_2, 1) = q_1$$

Since the final state is q_1 this is accepted.

b. $\hat{\delta}(q_0, 100)$

$$\hat{\delta}(q_0, \epsilon) = q_0$$

$$\hat{\delta}(q_0, 1) = \delta(\hat{\delta}(q_0, \epsilon), 1) = q_0$$

$$\hat{\delta}(q_0, 10) = \delta(\hat{\delta}(q_0, 1), 0) = \delta(q_0, 0) = q_2$$

$$\hat{\delta}(q_0, 100) = \delta(\hat{\delta}(q_0, 10), 0) = \delta(q_2, 0) = q_2$$

Since the final state is q_2 this is rejected.
