

# NOTES 4.5

NFA



$$\delta: Q \times \Sigma \rightarrow 2^Q$$

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

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

$$\delta(q_1, 0) = \emptyset$$

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

$$\tilde{\delta}: Q \times \Sigma^* \rightarrow 2^Q$$

For example above we have:

$$\tilde{\delta}(q_0, \lambda) = \{q_0\}$$

$$\tilde{\delta}(q_0, 1) = \{q_1\}$$

$$\tilde{\delta}(q_0, 0) = \{q_0, q_1\}$$

$$\tilde{\delta}(q_0, 01) = \bigcup_{p \in \tilde{\delta}(q_0, 0)} \delta(p, 1) = \{q_1\} \cup \{q_0, q_1\} = \{q_0, q_1\}$$

Note that  $\tilde{\delta}(q_0, 0) = \{q_0, q_1\}$

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

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