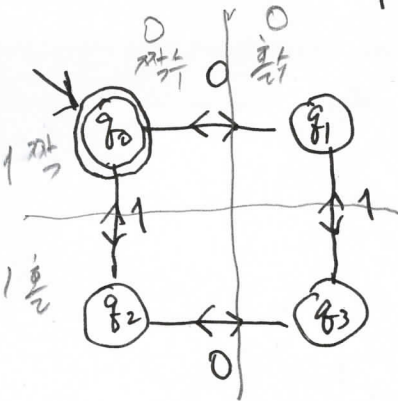


제 3주-하. Deterministic Finite State Automata (DFA)

문제: 여우, 닭, 새끼를 감지하기.

상태 (state)

기호문자 (alphabet)



$$Q = \{q_0, q_1, q_2, q_3\}$$

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

↖ 시작상태
(initial state)

⊙ 최종상태
(Final state S)

정의 DFA $D = (Q, \Sigma, \delta, q_0, F)$

5 순서쌍.
5-tuples

(1) Q : 상태 (state) 의 유한 집합.

(2) Σ : 입력 (input) 기호문자

(3) $\delta: Q \times \Sigma \rightarrow Q$ state transition function (상태 변화 함수)
 $q, p \in Q, a \in \Sigma$
 함수 쓰기



$(q, a, p) \in \delta$ 正法

$\delta(q, a) = p$ 편법.

(4) $q_0 \in Q$ initial state 처음 상태

(5) $F \subseteq Q$ set of final states 끝나는 상태 (F) (집합)

↖ 함수의 정의와 같다

② DFA $D = (Q, \Sigma, \delta, q_0, F)$, $x \in \Sigma^*$.

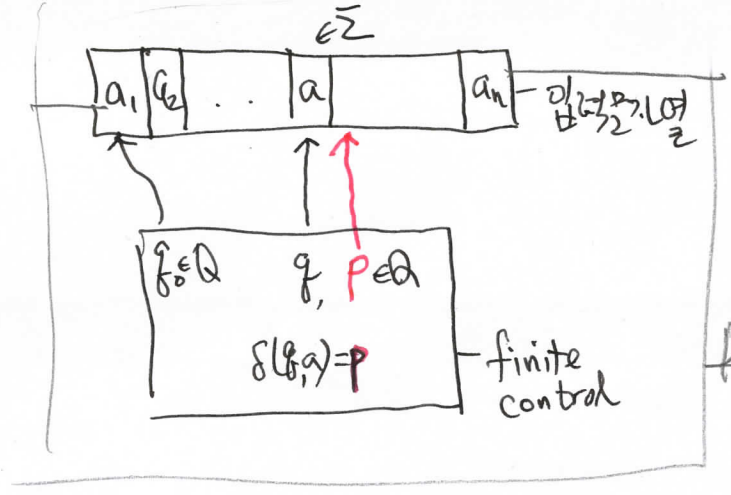
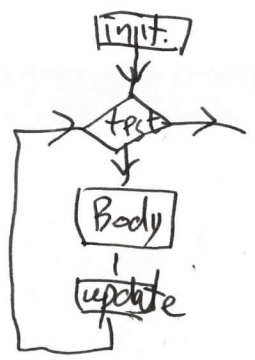
$= a_1 a_2 \dots a_n \quad (n \geq 0)$

if $n = 0 \rightarrow x = \epsilon$

if $n > 0 \rightarrow \bigwedge_{1 \leq i \leq n} a_i \in \Sigma$.

ⓐ \rightarrow ⓑ

$\forall i:$



DFA

$(D, x) \rightarrow \{ \text{start, go, stop} \}$



$x \in \Sigma^*$
 $x \in L(D) = \{ x \in \Sigma^* \mid \delta(q_0, x) \in F \}$

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

$\delta^n: \Sigma^n \rightarrow Q \quad (n \geq 0)$

$\delta^*: \Sigma^* \rightarrow Q$