

제12강 (10/3) M-DFA & CFG

Review
Chap. 2

DFA

$$Q \times \Sigma \rightarrow Q$$

mDFA: $Q \times \Sigma \rightarrow Q$ # of Q is minimal
for $L \subseteq \Sigma^*$

DFA w. par.

$$Q \times \Sigma \rightarrow Q \text{ or } Q \times \Sigma \rightarrow Q \cup \{\emptyset\}$$

regular

(FA)

NFA

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

= Regular Languages

ϵ -NFA

$$Q \times (\Sigma \cup \{\epsilon\}) \rightarrow 2^Q$$

Class of Languages
(types)

XFA

$$Q \times \Sigma^* \rightarrow 2^Q$$

Chap. 3

(R.E)

Th 4.1 Non-regular lang. - pumping lemma

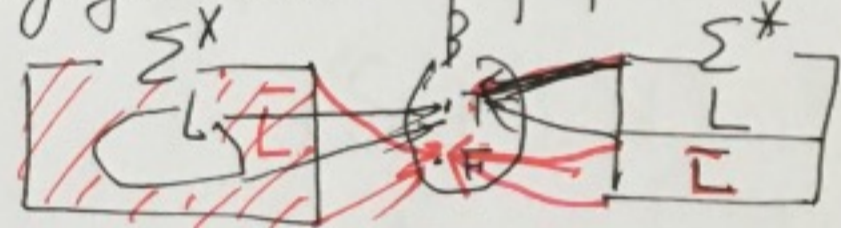
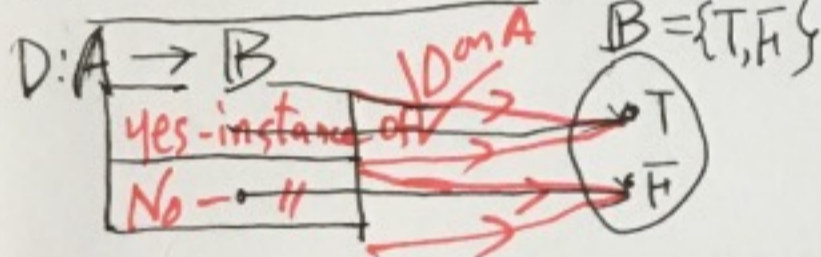
4.2 Closure Prop. of R.L's. $\cup, \cdot, *, \cap, -, \bar{}$, Reversal, Homomorphism

$$FA = RE = RL$$

중형. fa, re

4.3 Decision Problems of RL

Ex) Language membership problem



if $A = \Sigma^*$ D : Decision problem on Languages over Σ . DFA in RL

1. finite lang \rightarrow reg.

2. regular, finite ...

alg: * in R.E. except ϵ^*, \emptyset^*

cycle in FA
(Backedge)

$$RL = \overline{FA} = RE$$

1 : n

3. Let L is reg. Given σ, L DFA
 Σ^* RE, FA?

4. Given two reg. lang. $L_1, L_2, L_1 = L_2$ mDFA

Reg. Exp is infinite

$a, ata, atata, \dots$

ambiguity of R.E.

a, a^*, a^{x*}

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대형 중형 소형
KAIST 학생의 강요
세상 무서운 줄 알고, 사람 귀한 줄 안지

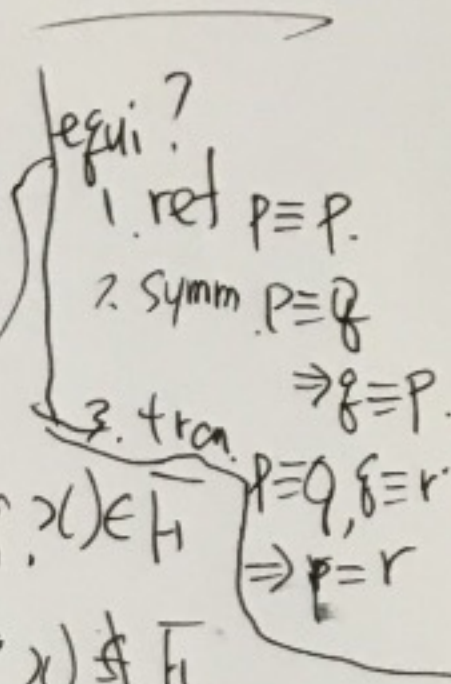
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格物致知, 诚意正心.
수신제가, 치국평천하. 차

4.4 Equivalence and Minimization of Automaton

M-DFA : unique rep. for R.L

같은 state $\stackrel{?}{=} \equiv$ 같아지.

\equiv 같은 일이 같은이면 같은 state. $Q \rightarrow P_{\text{can}}(Q)$



$\equiv \subseteq Q \times Q$ $P \equiv Q$, if $\forall x \in \Sigma^* \delta(P, x) \in F, \delta(Q, x) \in F$
or $\delta(P, x) \notin F, \delta(Q, x) \notin F.$

\equiv , Table Filling Alg. 문제 5-12 연습하십시오.

Chap 5. Context-free Grammars

CFG

$G = (N, T, P, S)$

Symbols

1) N: a finite set of Nonterminals, variable, syntactic category

2) T: a " " " " terminal symbols.

when $N \cap T = \emptyset$ we denote $V = N \cup T$: general symbol

3) P: a set of production rule - pair of $N \times V^*$
 $(A, \alpha) \in N \times V^*$
(grammar) (문법)

4) S: a start symbol in N written $A \rightarrow \alpha \in P$, $A \in N, \alpha \in V^*$
 $\in N$
nonterminal symbol = (NUT)*
general string