

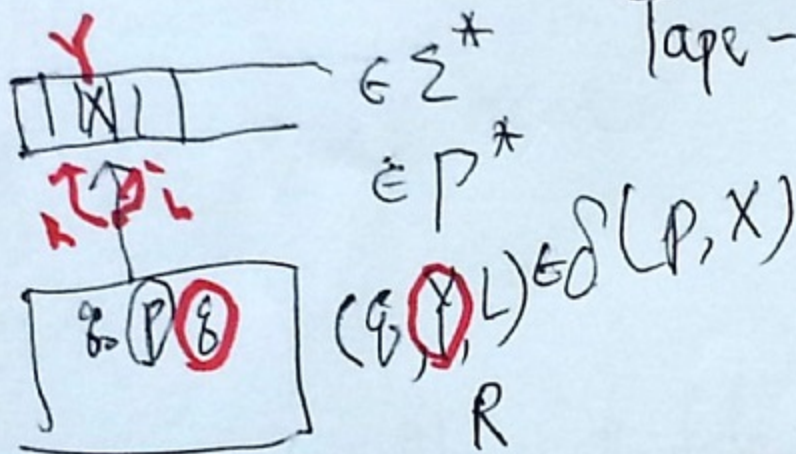
제 19 강 (11/18(화)) Chap 8. Int. to Turing Machine. (TM)

TM $M = (Q, \Sigma, \Gamma, \delta, q_0, B, F)$

1. Q ... state 집합
2. Σ ... input 시보의 집합 ($\Sigma \subseteq \Gamma$)
3. Γ ... tape " " ($Q \times \Gamma \times \{L, R\}$)
4. $\delta : Q \times \Gamma \rightarrow 2$
5. $q_0 \in Q$ 시작 상태
6. $B \in \Gamma$ 빈 공간
7. $F \subseteq Q$ 끝나는 상태들

11/20(화) 강의 합본
 컴퓨터 과학의
 진보와 함께
 프로그램의 복잡성
 증가함에 따라
 기법
 A discipline of programming
 E. Dijkstra

program spec.
 for 인간 사회,
 공식, 논리
 사서-노어, 영자
 수-대칭, 정수
 논리-논리, 정수
 변화-시각 - 문
 생각의 시공 (1/2)
 공작의 시공 (1/2)



Tape - Read/write Memory.

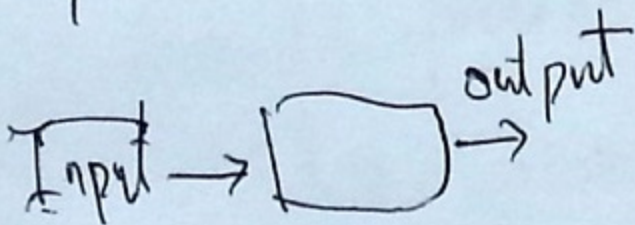
FA - ALU (CPU)

PDA = FA + stack

TM = FA + tape (memory)

= program + data.

Computer



set - ① 원소나열법

② 조건제시법

③ 프로그래밍 (Computer, TM) fi

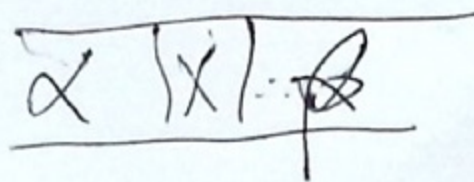
if $x \geq y \rightarrow m := x$
 if $x \leq y \rightarrow m := y$

Instantaneous description of TMs

$$(\alpha, q, \gamma\beta) \in \Gamma^* \times Q \times \Gamma^*$$

$$\alpha \in \Gamma^*, \gamma \in \Gamma, \beta \in \Gamma^*$$

$q \in Q \rightarrow$ read/write



Program - \aleph_0
countable

\mathbb{N}

problem $\mathbb{N} \rightarrow \{T, F\} \subseteq 2^{\mathbb{N}}$
uncountable

\therefore 답이 있는 문제도 있고
정답이 없는 문제도 " "

이러한, Halting problem.

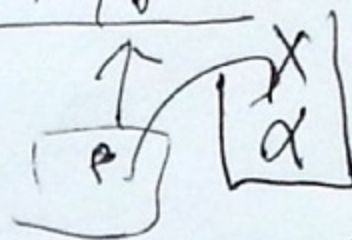
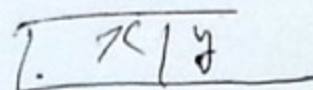
Russel's paradox.

Gödel's Incompleteness problem.

\rightarrow Self recursion $\frac{1}{2}$ $\frac{1}{2}$.

Cantor's diagonal Arg.

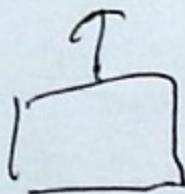
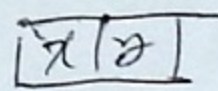
PDA ID.



$$(y, q, \gamma\alpha) \in \Sigma^* \times Q \times \Gamma^*$$

\uparrow
read only

~~FA~~ ID



$$(y, p) \in \Sigma^* \times Q$$