

Power set (멱집합) of 집합 A.

$$P(A) = \overline{2^A} = \{B \subseteq A\} \quad |2^A| = 2^{|A|}$$

function.

$$B^A = \{f: A \rightarrow B\} \cong B^{|A|} \cong B^n \quad (\text{if } |A|=n)$$

$$2^A \leftrightarrow \{0,1\}^A \quad \text{길이 } |A| \text{인 이진수.}$$

$$(ex) B^{\{1,2,3\}} \xrightarrow{f} B^{\{1,2,3\}} \leftrightarrow B^{\{1,2,3\}} \xrightarrow{def.} B^3$$

$$R \subseteq A \times B \quad \wedge \quad \underline{a R b_1, a R b_2, \dots, a R b_k}$$

$$\exists 0 \leq k \leq |B| \quad (a, b_1), (a, b_2), \dots, (a, b_k) \in R$$

$$\leftrightarrow R(a) = \{b_1, b_2, \dots, b_k\} \subseteq B.$$

$$R \subseteq A \times B :$$

$$* R: A \rightarrow 2^B$$

$$R: (A \times B) \rightarrow \{T, F\}$$

$$(a, b) \in R$$

$$R(a) = \{b_1, b_2, \dots, b_k\} \leftrightarrow [b_1, b_2, \dots, b_k]$$

in 2nd Ed. of text.

$$\left[ \begin{array}{l} R(a, b) = T \\ \text{or} \\ R(a, b) = F \end{array} \right. \quad R(a, b).$$

~~$$R: A \rightarrow B$$~~

Assignment statement considered harmful. E. Dijkstra  
 " " for optimization. 최광목  
 is the definition in math. "

Functional language.

Assignment statement in function calls.

binding (actual par.  $\rightarrow$  formal par.)

(F.P := A.P)

Recursion

(Basis)  $0 \in \mathbb{N}$

(Recursion)  $n \in \mathbb{N} \Rightarrow n+1 \in \mathbb{N}$ .

Recursion  $\stackrel{\circ}{=}$  induction  $\subset$  (non-deduction)

$\frac{\circ}{22} \stackrel{\circ}{=} \text{deduction}$

isomorphism of infinite sets

$\mathbb{N}_0 = \{0, 1, 2, \dots\}$ ,  $\mathbb{N}_1 = \{1, 2, 3, \dots\}$   $\mathbb{N}$  數  
 $\mathbb{N}_0 \not\cong \mathbb{N}_1$ , but  $|\mathbb{N}_0| \cong |\mathbb{N}_1|$  when  $\mathbb{N}_0 \xleftrightarrow{f} \mathbb{N}_1$

$$f(x) = x+1$$

$(\mathbb{N}, +)$  ... algebraic system (대수계)

$+$ : 덧셈이다.

