제 2강 (1주 1/3) 이산수학 개념

Let A and B be sets. A (binary) relation from the set A to B, called as domain (정의역) the set of R range 공역

R can be defined as follows:

$R \subseteq A \times B$. where $A \times B = \{(a,b) \mid a \in A, b \in B\}$

(a,b) ordered pair (순서쌍) $\in X \times Y$

$(a,b) \neq (b,a)$

$\{a,b\} = \{b,a\}$

공학도 — 수학
인문사회 — 언어
건산학 — P.L(?)

a) $A=\{a,b\}$, $B=\{1,2,3\}$ $a \in A, b \in B, c \in C$

$R_2 \subseteq A \times B \times C$ $(a,b,c) \in R_2$

$R_3 \subseteq (A \times B) \times C$ $((a,b),c) \in R_3$

ex $R=\{(a,2),(a,1)\}$ $R=\emptyset$

AB의 관계 $|R| = 2^{|A| \times |B|} = 2^{|A \times B|}$

$R \subseteq A \times BA$ (binary) relation on A $\quad id_A$

(A, R) ... a graph of vertices A and edge R.
directed

$\langle A \rangle \to$ 문자 | 숫자 | $\langle N \rangle + \langle N \rangle$ | $\langle N \rangle \times \langle N \rangle$

id_A : identity relation on A. $\quad R \cdot id_A = id_A \cdot R = R$

(A, R, ∘)

(ℕ, +, 0)

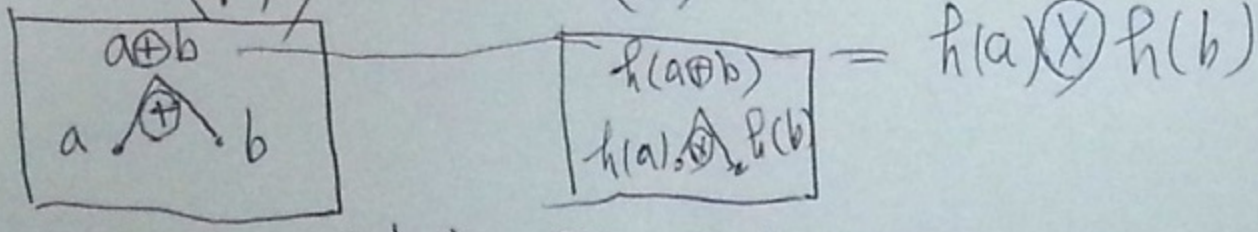
(ℕ, ×, 1)

예 $(\mathbb{N}, +) \xrightarrow{h}$: $(\{짝, 홀\}, \oplus)$

abstract interpretation

homomorphism

$(A, \oplus) \xrightarrow{h} (B, \otimes)$



⊕ 정밀하다 연산 refinement $|A| \geq |B|$ ⊗ 거친 연산 coarser