

Three sets  $A, B$  and  $C$  are disjoint,  
if they are pairwise disjoint,  
i.e.,

$$\left. \begin{array}{l} \text{(i)} \quad A \cap B = \emptyset \\ \text{(ii)} \quad B \cap C = \emptyset \\ \text{(iii)} \quad A \cap C = \emptyset \end{array} \right\}.$$

We call  $A_1, A_2, \dots, A_n$  are disjoint,

$$\text{if } A_i \cap A_j = \emptyset, \quad \forall i, j = 1, 2, \dots, n, \\ i \neq j.$$

$R$  is a relation on a set  $A$

$$\Rightarrow \boxed{R \subseteq A \times A}$$

$$\left. \begin{array}{l} R \subseteq A \times B \times C \leftarrow \text{ternary relation} \\ R \subseteq A_1 \times A_2 \times \dots \times A_n \leftarrow n\text{-ary} \end{array} \right\}$$

$\Downarrow$   
Database Systems

$$A = \{5\}, \quad B = \{5, 8\}$$

$$A \times B = \{(5, 5), (5, 8)\}$$

$$R \subseteq A \times B$$

$$R_1 = \{(5, 5)\}$$

$$R_2 = \{(5, 8)\}$$

$$R_3 = A \times B$$

$$I \times I = \{ \dots (2, 3), (2, 4), \dots \}$$

$$R = \{(x, y) \mid x \in A, y \in B\}$$

$$\bar{R}' = \{(y, x) \mid x \in A, y \in B\}$$

$$R \subseteq A \times B, \quad \bar{R}' \subseteq B \times A$$