Chapter-01

Relation and Function

TYPES OF RELATIONS:

- A relation R in a set A is called reflexive if (a, a) ∈ R for every a ∈ A.
- A relation R in a set A is called symmetric if (a1, a2) ∈ R implies that (a2, a1) ∈ R, for all a1, a2 ∈
- A relation R in a set A is called transitive if (a1, a2) ∈ R, and (a2, a3) ∈ R together imply that (a1
- all a1, a2, a3 ∈ A.

EQUIVALENCE RELATION

- A relation R in a set A is said to be an equivalence relation if R is reflexive, symmetric and transitive.

  Equivalence Classes

- Every arbitrary equivalence relation R in a set X divides X into mutually disjoint subsets (Ai) called partitions or subdivisions of X satisfying the following conditions:
- All elements of Ai are related to each other for all i
- No element of Ai is related to any element of Aj whenever i ≠ j
- $Ai \cup Ai = X \text{ and } Ai \cap Ai = \Phi,\ i \neq j$. These subsets $((A_i))$ are called equivalence classes.
- For an equivalence relation in a set X, the equivalence class containing a ∈ X, denoted by [a], is the subset of X containing all elements b related to a.

  ****Function: Arelation f: A** $\longrightarrow$ B is said to be a function if every clement of A is correlated to a

  Unique element in B.

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