Introduction

* **Cartesian Product** – The cartesian product of two sets and is the set of all possible combinations of their elements, .
* **Power Set** – The power set of a set is the set of all possible subsets of its elements, , including the set itself and the empty set.
* **Relation** – A relation is simply a mapping between two elements. The set that represents all the mappings is called the relation. For example, if every element of the set has some sort of mapping with every element of set , the cartesian product is a relation. Generally, an element having a relation with an element is denoted as .
* **Reflexive Relation** – A reflexive relation is a set in which every element has a relation with itself, i.e., .
* **Proposition** – This is a statement which can be proven true or false. Propositions are represented using mathematical notations for AND (), OR (), NOT (), IF-THEN () and IF-AND-ONLY-IF ().
* **Symmetry** – Symmetry occurs when for every pair of and , there exists some proposition that states that if there is a relationship between and , there is also a relationship between and . Formally, .
* **Transitive Relation** – A transitive relation is the proposition that for every set of , and , if there is a relation between and and a relation between and , then there is a relation between and . Formally, .