What is set? A "SET" is a well defined structure representing an unordered collection (group, plurality) of zero or more distinct (different) objects.

* Set theory deals with operations b/w, relations among and statements about sets.

Objectives

- Its a useful tool for formalizing and reasoning about computation and the objects of computation.

- It is similar to logic where comp. sci has its roots.

- It is source of fundamental ideas in comp sci from theory to practice

Basic Definitions

- Objects in a set are called called the ELEMENTS or MEMBERS of the set.

- capital letters A, B, C... usually denote sets.

- Lowercase letters a, b, c... denote the elements of a set.

- We relate an item in the set using the symbol $\in$ "(an element of)" relation.
$$x \in \{x, y, z\}$$

Examples
- collection of vowels in the word "probability".
- collection of real numbers that satisfy an eq^n
- collection of 2 digit +ve integers divisible by 5
- collection of great football players at NFL.
- collection of intelligent members of the parliament

Representation of Sets.

① SET BUILDER METHOD.

The actual elements of the set are not listed; relatively, a brief or a statement or formula is written inside a pair of curly braces.

$$A = \{1, 2, 3, 4, 5\}$$
$$A = \{x \mid x \in N, \quad 1 \leq x \leq 5\}$$

$$A = \{2, 4, 6, 8, 10, 14\}$$
$$A = \{2x \mid x \in N, \quad 1 \leq x \leq 7\}$$

② ROSTER METHOD

The set elements under consideration are written inside a pair of curly braces and are seperated by commas.

$$A = \{0, 2, 4, 6, 8, 10\}$$