

### **Outline**

- Data, Entity and Information
- Primitive data types
- Non primitive data Types
- Data structure
  - Definition
  - Classification
- Data structure operations.

## Data, Entity and Information

- Data represents a single value or a set of values assigned to entities. Data item refers a single or group of values with in the data
- An entity is a thing that has some properties which can take values.
- Processed or meaning full data is called information. This is used for taking some action.

## Primitive data types

- These are the data structures which are directly supported by the machine.i.e.Any operation can be performed in these data items.
- The different primitive data types are
  - Integer
  - Float
  - Double
  - Character
  - boolean

## Non Primitive data types

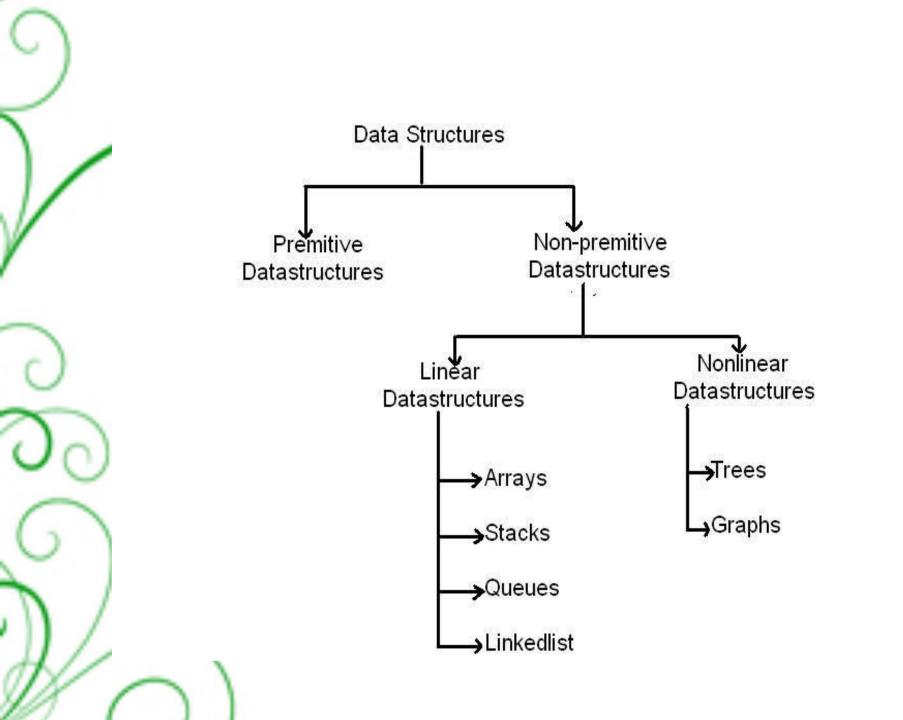
- These Datastructures do not allow any specific instructions to be performed on the Data items directly.
- The different non primitive data types are
  - Arrays
  - Structures
  - Unions
  - Class etc.

### Data structure

- A *data structure* is an arrangement of data in a computer's memory or even disk storage. An example of several common data structures are arrays, linked lists, queues, stacks, binary trees, and hash tables.
  - Algorithms, on the other hand, are used to manipulate the data contained in these data structures as in searching and sorting. Many algorithms apply directly to a specific data structures.

#### Data structure

- When working with certain data structures you need to know how to insert new data, search for a specified item, and deleting a specific item.
- Commonly used algorithms include are useful for:
  - Searching for a particular data item (or record).
  - Sorting the data. There are many ways to sort data. Simple sorting,
    Advanced sorting
  - Iterating through all the items in a data structure. (Visiting each item in turn so as to display it or perform some other action on these items)



# Classification There are two types of data structure. They are Linear Datastructures Non-Linear Datastructures

# Linear Data structures

- This Data Structures involve arranging the elements in Linear fashion.
- **■** Eg.
  - Stacks
  - Queue
  - Lists

### Non-Linear Data structures

- This Data structures involve representing the elements in Hierarchical order.
- **E**g:
  - Trees
  - Graphs

## Data structure operations

- Operation means processing the data in the data structure. The following are some important operations.
  - Traversing
  - Searching
  - Inserting
  - Deleting
  - Sorting
  - Merging

# operations

- Traversing
- To visit or process each data exactly once in the data structure
- Searching
- To search for a particular value in the data structure for the given key value.
- Inserting
- To add a new value to the data structure

