



Elementary Data Organization

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

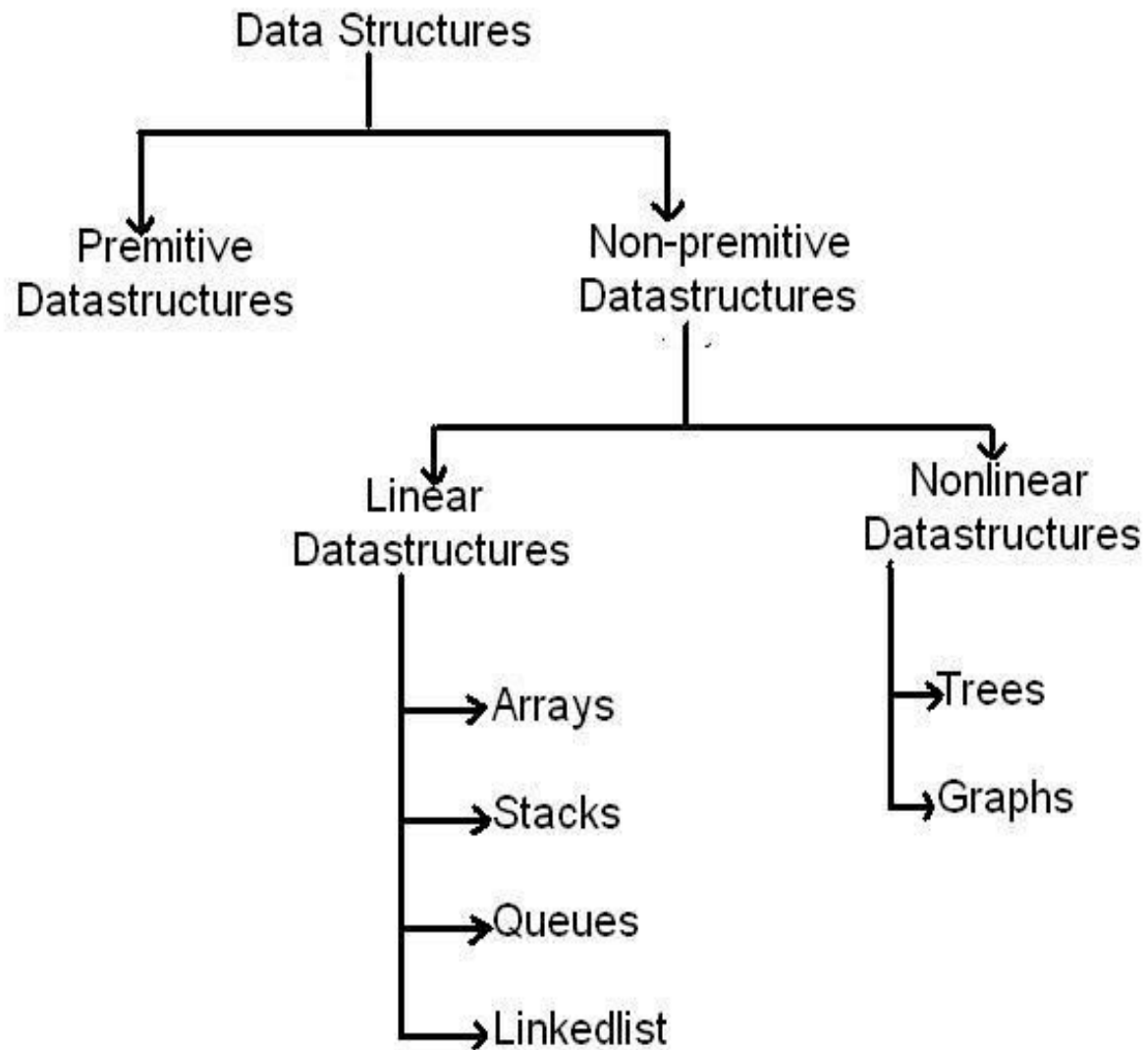
- These Datastructures do not allow any specific instructions to be performed on the Data items directly.
- The different non primitive data types are
 - Arrays
 - Structures
 - Unions
 - Class etc.

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.
- Eg:
 - **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

operations

- **Deleting**
 - To remove a value from the data structure
- **Sorting**
 - To arrange the values in the data structure in a particular order.
- **Merging**
 - To join two same type of data structure values