

# Notes of Data Structure

## \* Defination of data structure :-

A **data structure** is a particular way of storing and organizing data in a computer so that it can be used effectively.

↳ purpose is efficient use of data.

↳ Some examples of data structure are :-

→ Array

→ Linked list

→ Stack

→ Queue etc.

↳ **Data Structure** are widely used in almost every aspect of computer science i.e. operating system, Artificial Intelligence, Graphics and many more.

↳ Data Structure are categorised into two types :-

1) Primitive data Structure

2) Non-Primitive data Structure

# Types of data Structure

Primitive data Structure

int float char Pointers

Non-Primitive Data Structure

Linear data Structure Non-linear data Structure

## 1. Primitive data Structure :-

It represents fundamental data types which are supported by Programming language.

E.g.:- int, float, char.

## 2. Non primitive data Structure :-

These data structure can be built by using primitive data structure.

• Non Primitive data structure again classified into two types :-

(i) Linear data Structure

(ii) Non-Linear data Structure

(i) Linear Data Structure :-

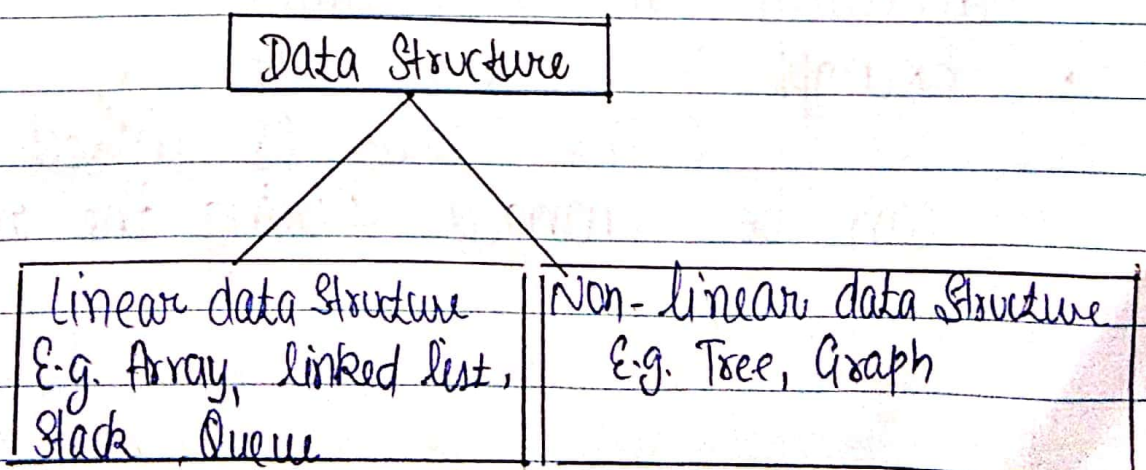
The elements in a linear data structure form a linear sequence.

Example:- Array, linked list, Queue, Stack etc

(ii) Non-Linear Data Structure :-

The elements in a non-linear data structure do not form any linear sequence.

example:- Tree, Graph.



## \* Static and Dynamic Data Structures :-

### • Static Data Structure:-

- Static data structure are those whose memory occupation is fixed.
- The memory take by these data structure cannot be increased or decreased at run time.
- Example :- Array.

### • Dynamic Data Structure:-

- Dynamic data structure are those whose memory occupation is not fixed.
- The memory taken by these data structure can be increased or decreased at run time.
- Example :- Linked list.  
(The size of linked list can be changed during the run time).

## \* Homogeneous and Non-Homogeneous Data Structure

### • Homogeneous Data Structure :-

Homogeneous data structure are those in which <sup>data</sup> of same type can be stored.

example:- Array.

### • Non-Homogeneous Data Structure :-

Non-Homogeneous data structure are those in which data of different types can be stored.

Example:- Linked list.