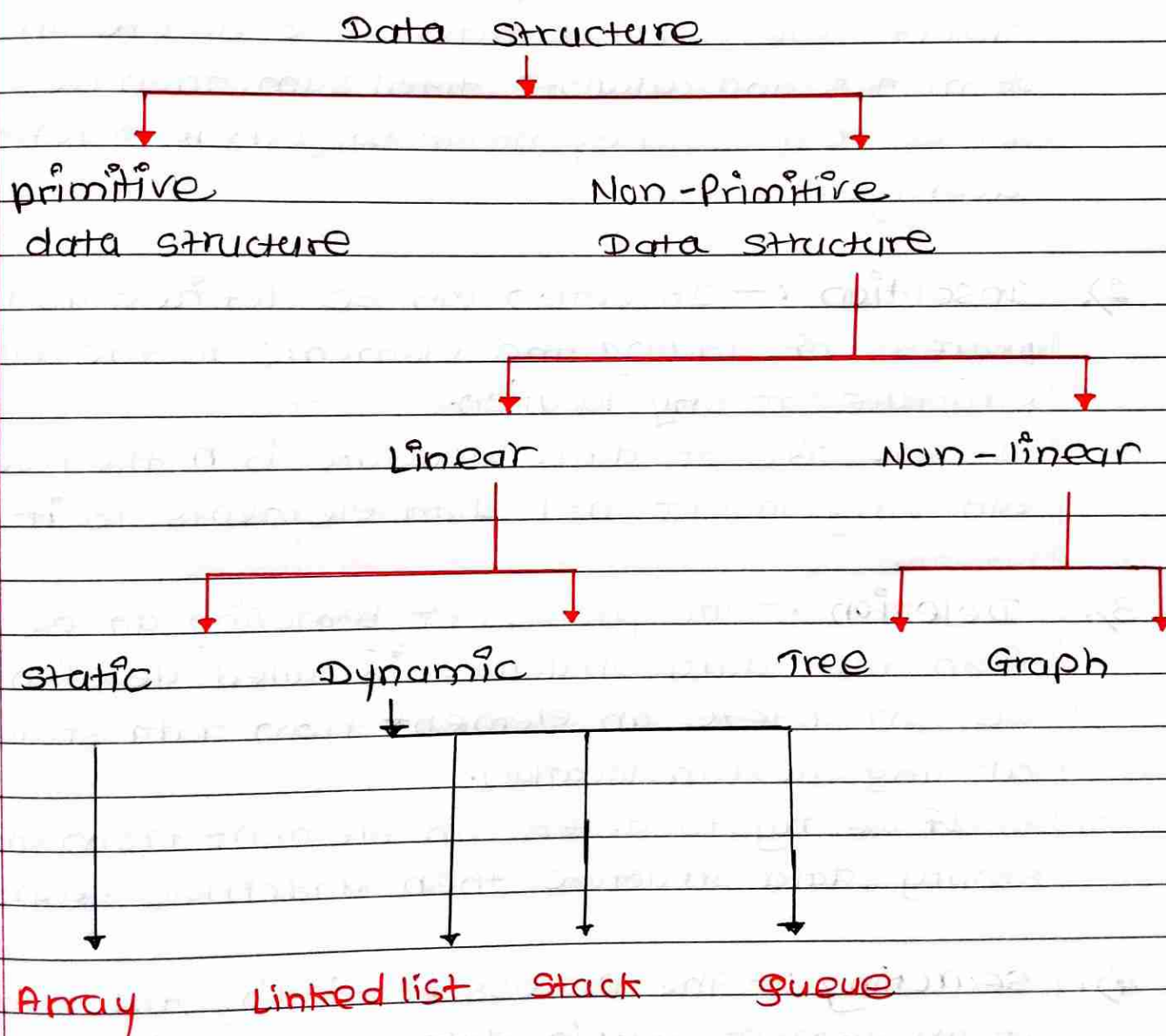


Abstraction :- The data structure specified by the ADT also provides level of abstraction. The client cannot see internal working of data structure, so it does not have to worry about implementation.

* **Data structure classification :-**



Operations on data structure :-

- 1) **Traversing** :- Every data structure contains a set of data elements. Traversing data structure means visiting each element of data structure in order to perform some specific operation like searching or sorting.

Example :- If we need to calculate average of marks obtained by a student in 5 different subject, we need to traverse complete array of marks and calculate total sum, then we will divide that sum by no. of subjects i.e. 5 to find average.

- 2) **Insertion** :- Insertion can be defined as the process of adding the elements to the data structure at any location.

If the size of data structure is n then we can only insert $n-1$ data elements to it.

- 3) **Deletion** :- The process of removing an element from the data structure is called deletion. we can delete an element from data structure at any random location.

If we try to delete an element from an empty data structure then underflow occurs.

- 4) **searching** :- The process of finding the location of an element within data structure is called searching. There are two algorithms to perform

searching, linear search and Binary search.

- 5) **Sorting** :- The process of arranging the data structure in a specific order is called as sorting. There are many algorithms that can be used to perform sorting, for example, insertion sort, selection sort, bubble sort etc.
- 6) **Merging** :- When two lists list A and list B of size m and n respectively, of similar type of elements, clubbed or joined to produce third list, list C of size $(m+n)$, then this process is called merging.

DATA STRUCTURES AND ALGORITHM

What is Algorithm?

An **algorithm** is a process or a set of rules required to perform calculations or some other problem-solving operations especially by a computer.

It is not complete program or code; it is just a solution (logic) of a problem, which can be represented either as an informal description using a flowchart or pseudocode.

characteristics of an **algorithm**.

Input :- An algorithm has some input values. We can pass 0 or some input value to an algorithm.