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Id - 2219170041
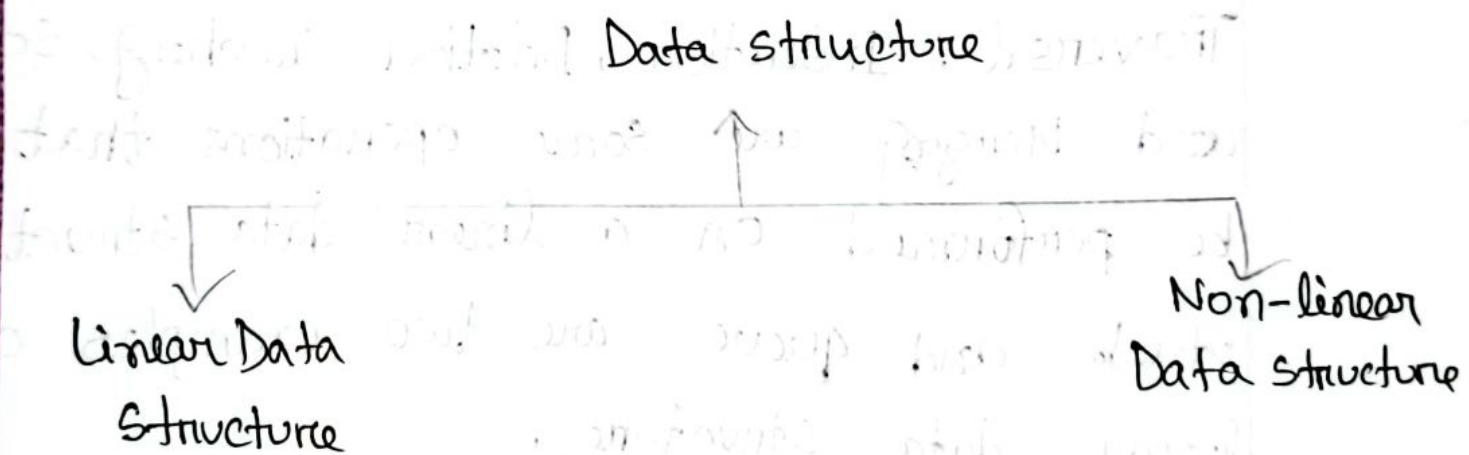Course code-CSI 217
Course title- Data Structure

Ans to the Ques. No-1(a)

In computer science, an array is a data structure consisting of a collection of elements, of same memory size, each identified by at least one array index or key.
An array is stored such that the position of each element can be computed from its index tuple by a mathematical formula.

Data structure

Linear Data Structure — Non-linear Data structure

A data structure is a way of organize and storing data in a computer so that it can be accessed and used efficiently it refers to the logical or mathematical representation of data. as well as the implementation in a computer program.

Ans to the Ques. No- 1(b)

Data structures allow us to organize and store data, while algorithms allow us to process that data in a meaningful way. Learning data structure and algorithms will help you become a better programmer. You will be able to write code that is more efficient and more reliable.

Traversal, Insertion, Deletion, Searching, Sorting and Merging are some operations that can be performed on a linear data structure. Stack and queue are two examples of linear data structures.

Ans to the Ques. No- 1(c)

There are two common types of arrays: linear arrays and associative arrays. Linear arrays store elements in a linear order, meaning their index beings from 0 and goes up incrementally as new elements are added. Associative arrays store elements that keys can access and their index is not bassed on linear order.

The basic operations in the Arrays are insertion, deletion, searching, display, traveres, and update. These operations are usually Performed to either modify the data in the array or to report the status of the array.

The following are the basic operations served by stacks. Push: Adds an element to the top of the stack. pop: Removes the topmost element from the stack. is Empty: Checks whether the stack is empt.

two operations that can be performed on the stacks are push and pop: Push is used to insert element into the stack and pop operation is used to remo element from the top of the stack.

Ans to the Ques. No- 2(b)

Representation of Graphs in Data Structures

Graphs in data Structures are used to represent the relationships between objects. Every graph consists of a set of points known as vertices or nodes connected by linear known as edges.

The vertices in a network represent entities.

Graphical representation refers to the use of charts and graphs to visually display, analyze, clarify and interpret numerical data, functions and other qualitative structures.

It simply involves taking the sum of a group of numbers, then dividing that sum by the count of the numbers, used in the series.

Arithmetic mean represents a number that is obtained by dividing the sum of the elements of a set by the number of values in the set. So you can use the layman term. Average or be a little bit fancier and use the word "Arithmetic mean".

Arithmetic Mean Formula,

If any data set consisting of the values $b_1, b_2, b_3, \ldots, b_n$ then the arithmetic mean B is defined as:

$$= \frac{1}{n} \sum_{i=1}^{n} b_i = \frac{b_1 + b_2 + b_3 + \cdots + b_n}{n}$$