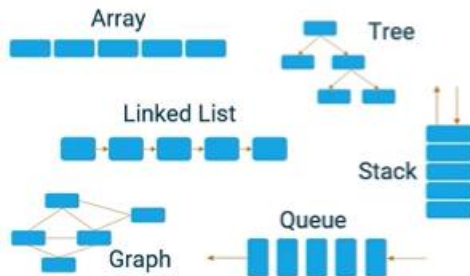


Introduction to Data Structure and Algorithms:

Data Structure is storage and organization of data. We can organize our data in the way we want, and these different ways of organizing data are the different DATA STRUCTURES.



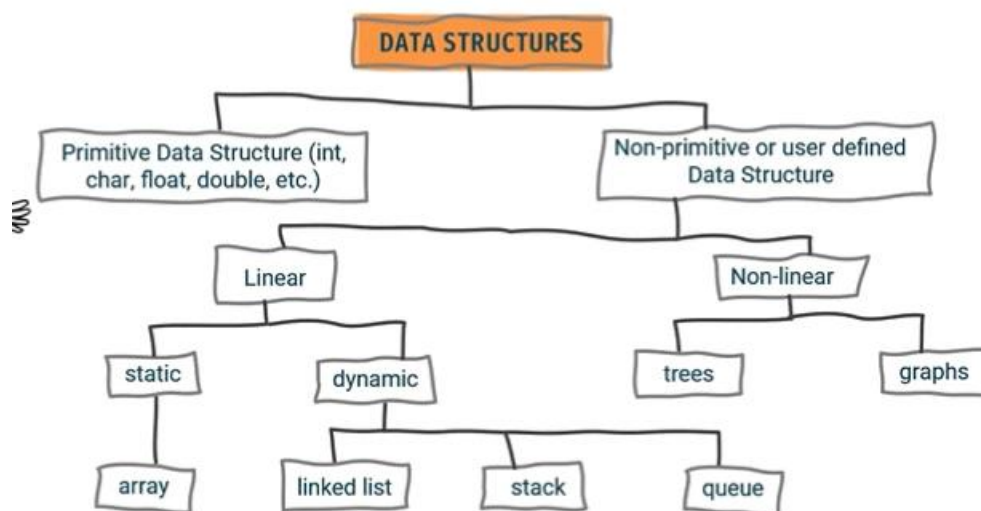
Advantages of a Data Structure:

1. Efficiency.
2. Reusability.
3. Abstraction.

Operations on Data Structure:

1. Insertion
2. Modification
3. Deletion
4. Search
5. Sort
6. Merge
7. Traverse

DATA STRUCTURE CATEGORIES



A **non-linear** data structure can be constructed as a collection of a randomly distributed set of data items joined together by using a reference pointer.

Algorithms is a step-by-step procedure to solve a problem.

We need to have a good understanding of Data Structures to understand the following questions:

1. How can you store friends' information on a social networking site?
2. How can you store an image (1000 by 1000 pixels) as a bitmap?
3. How is your contact list stored and maintained on your mobile?
4. How do game developers store the possible moves in a chess game?
5. How can you implement a printer spooler so that jobs can be printed in the order of their arrival?
6. How are locations and connected road information stored and maintained in Google Maps?

Summary

- Algorithms and data structure are two main components of a problem solution.
- An algorithm is a step-by-step procedure for performing a task within the specified time.
- A data structure is a way to store and organize data.
- A data structure's major operations include insertion, modification, deletion, search, sort, merge and traversal of data.
- Abstract Data Types (ADT) represents the type of data and the operations without revealing the way of implementation.
- Data structure are of linear types and non-linear types.
- In a linear data structure, data is arranged in a linear or sequential order whereas in a non-linear data structure, data is stored in non-sequential order.