Data Structure

A data structure is a particular way of storing and organizing data

Data Types

Char (for character values)

int (for integral or fixed-precision values)

Float (for storing real number values)

Double (a larger size of type float)

Boolean (for boolean values True/False or (1/0))

Abstract data types - certain class of data structures that have similar behavior;

List

Set

Map

Queue

Stack

String - a sequence of characters

Tree

Graph

Array

Collection of variables of the same type

All arrays consist of contiguous memory locations.

The lowest address corresponds to the first element and the highest address to the last element.

Linked List

Linked data structures are based on storing addresses of data items within the structure itself

A linked list is a collection of structures ordered not by their physical placement in memory but by logical links that are stored as part of the data in the structure itself.

It is not necessary that it should be stored in the adjacent memory locations.

Every structure has a data field and an address field.

The Address field contains the address of its successor.

Linked list can be singly, doubly or multiply linked and can either be linear or circular.

Graphs and trees are linked abstract data structures composed of nodes.

Each node contains a value and also one or more pointers to other nodes.

Graphs can be used to represent networks

Trees are generally used for sorting and searching, having their nodes arranged in some relative order based on their values.