Data Structure Using C

Ch. 03.01

Introduction to Data Structure

- Introduction To data Structure
  - Introduction Primitive and simple structures
  - Linear and nonlinear structures file organization.
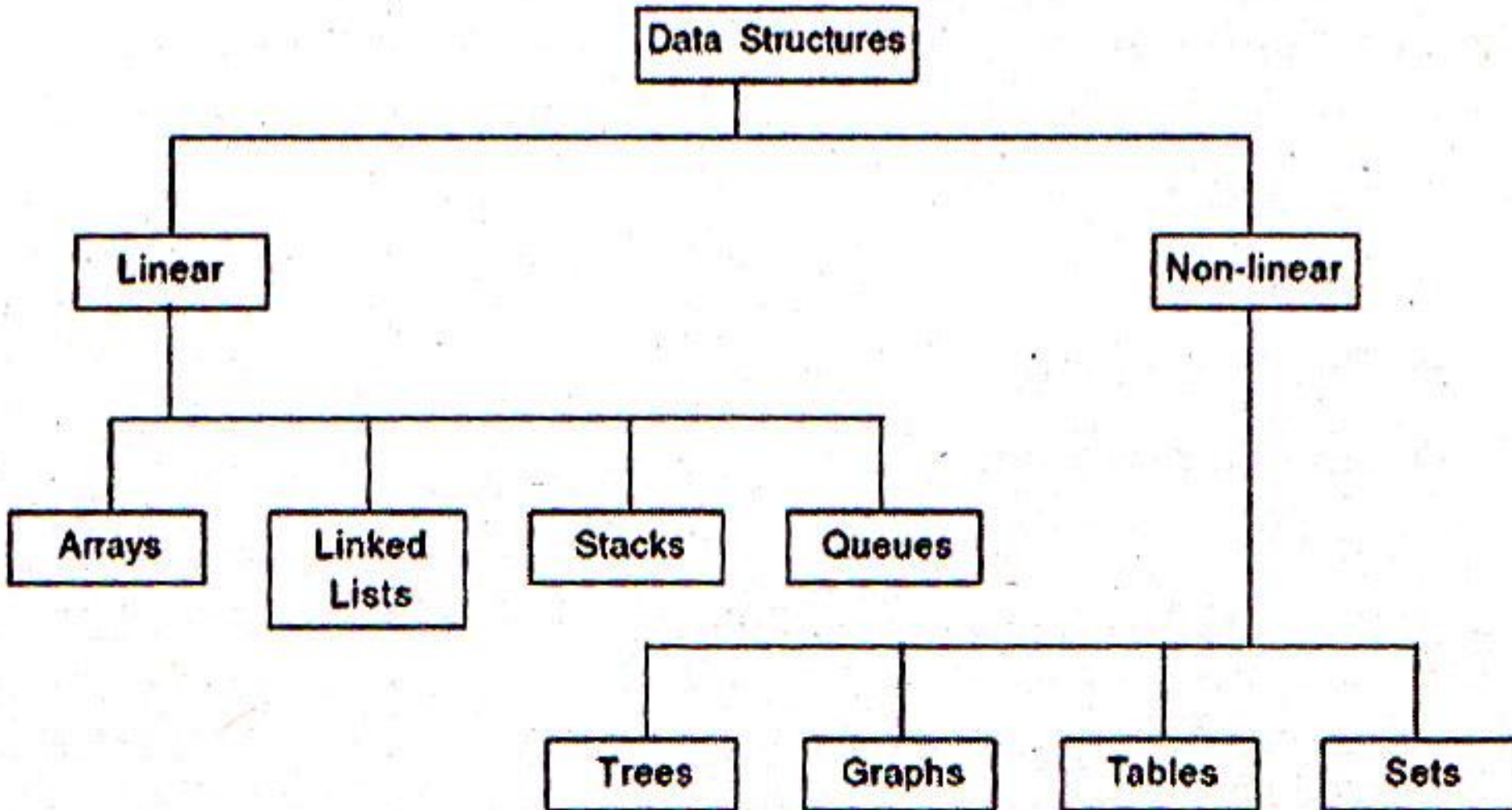
Introduction to Data Structure

- ## Data

  - Data is a collection of information.

- ## Data Structure

  - A data structure is a way of organizing data items that considers not only the items stored, but also their relationship to each other.

Introduction to Data Structure

- ## Features of Data Structure

  - They can be decomposed (ધટકો છૂટાં પાડવા) into their component elements.

  - The arrangement of the element is a feature of the structure that will be affect how each element will be accessed.

  - Both the arrangement of the element and the way are accessed can be encapsulated.
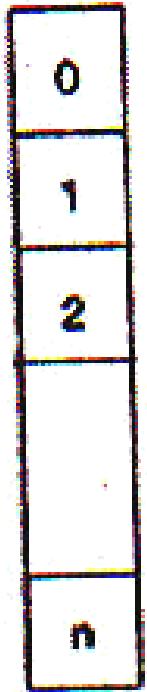
Types of Data Structure

Types of Data Structure

- There are two types of Data Structure
  - Liner Data Structure
  - Non Linear Data Structure

Liner Data Structure

❑ We saw that it is very simple to create data structure that are organized similar to the way the computer's memory.

❑ A data with its elements from a linear sequence.

■ Array

❑ An ordered set of a fixed number of objects with same data type without insertion.

arrays

Liner Data Structure

- ## Linked List

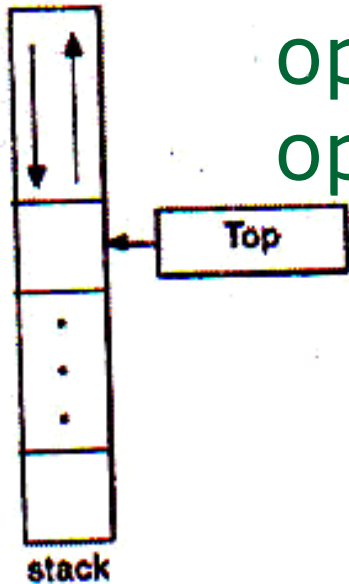 - A simple way to represent liner list to expand each node with a link or point to next node, is called linked list.
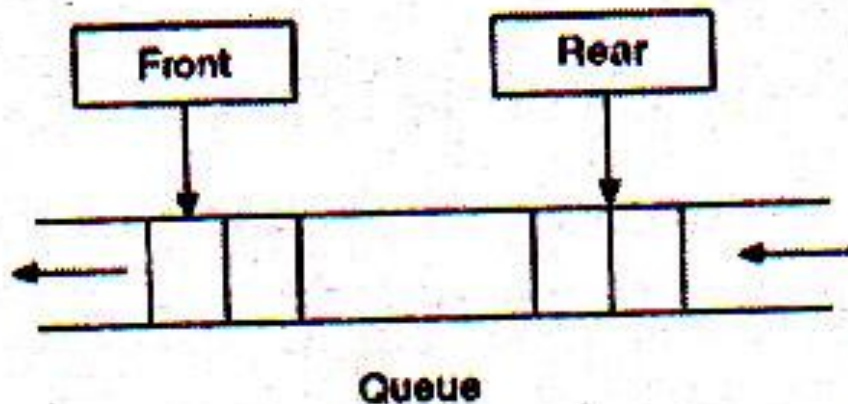
Linked list

- **Stack**

  - An important subset of a list, which allows insertion & deletion at only one end is known as stack.

  - In stack insertion operation is referred to as 'PUSH' and deletion operation is referred to as 'POP' operation.

stack

- ■ Queue
  - ❑ Queue permits the insertion at one end and deletion at another end known as queue.
  - ❑ At end of which deletion is occurs are known as front end.
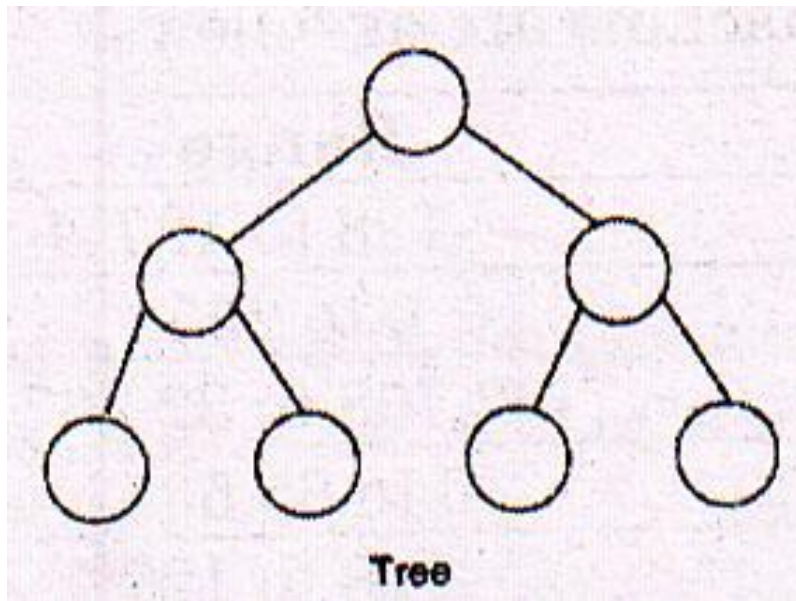 - ❑ At another end at which insertion occurs are known as rear end.

Queue

NON-Liner Data Structure

- A non-liner data structure is a data structure in which the data items in the memory are not allocated in sequence.
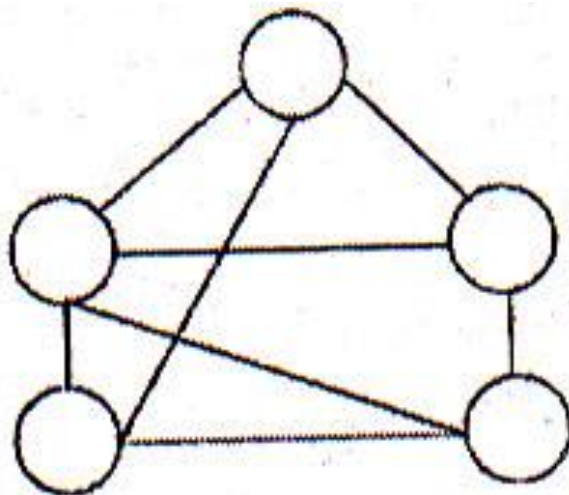
- ## Tree

  - A Tree consist of nodes connected by edge, the node represent by circle and edge as lives connecting to circle.

Tree

- Graph

  - A Tree is actually an instance of a more general category called graph.
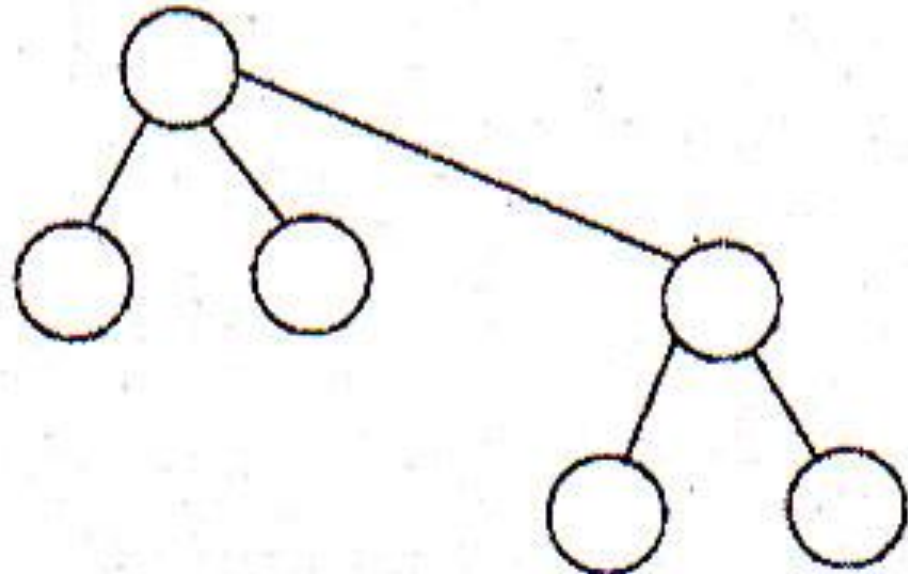 - A tree can be viewed as restricted graph.

Graph

- ## Table
  - A Table will arrange all data in a sequence.

Table

- ## Set

  - A set is a group of various data structure.

Sets

Primitive Data TYPE

- A basic type is a data type provided by a programming language as a basic building block.

- Primitive Date Type is a build-in type, it is a data type for which the programming language provides built-in support.

- It is a data structure which is directly operated upon machine level instruction.

Non-Primitive Data TYPE

- Non-Primitive data type are not defined by the programming language, but are created by the programmer.

- Non-Primitive data type are also called as reference variables or object references.