SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF INFORMATION TECHNOLOGY
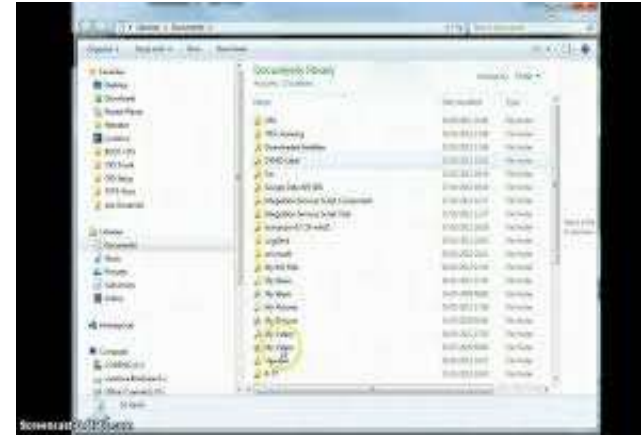# B.Tech - AIML

DATASTRUCTURES

II YEAR III SEM

UNIT 1 –LINEAR STRUCTURES

TOPIC 1 – Introduction

Introduction- Need of Structure

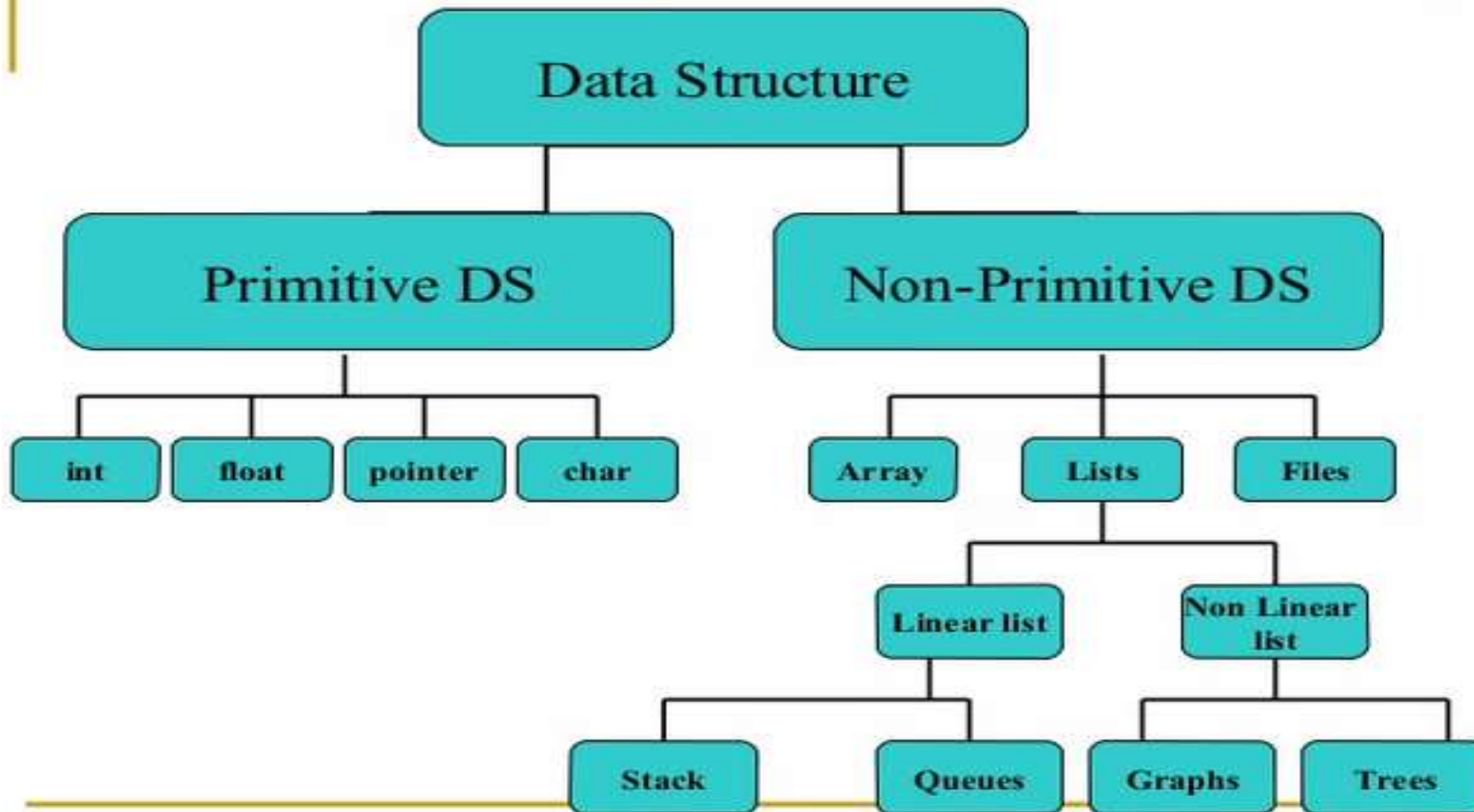Introduction/Data Structure/ Ms.S.Rajasulochana /IT/SNSCT

Data Structure

➢ **The logical or mathematical model of particular organization of data**

- Specifies the following four things
  1. Organization of data
  2. Accessing Methods
  3. Degree of Associativity
  4. Processing alternatives for information

Types of Data Structure

Operations on Data Structures

➢ **Traversal** -Processing each element in the list

➢ **Search**-Finding the location of the element with a given value with the given key

➢ **Insertion** - Adding new element to the list

➢ **Deletion** -Removing an elements from the list

➢ **Sorting** -Arranging the elements in some type of order
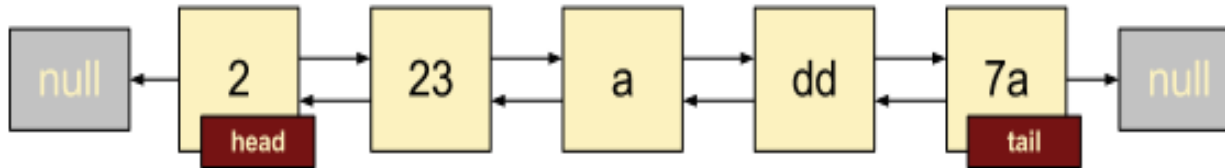
➢ **Merging** -Combining two list into a single list

Implementation of Data Structure

Two ways of Implementation

➢Array

➢Linked List

Difference Between Array & Linked list

ARRAYS

1. Good Data structure for Searching algorithms.
2. **Disadvantage** : Insertion and Deletion of Elements require Data movements(Time Consuming)

LINKED LIST

1. It allows quick insertion and deletion of elements.
2. Searching is difficult.

A Sequential traversal from the beginning of the list is required to search for an element until it is found or up to the end of the list

Benefits

➢ Space for each item it stores is more

➢ Time to perform basic operation is less

➢ Programming effort and complexity is reduced

References

1. M. A. Weiss, "Data Structures and Algorithm Analysis in C", Pearson Education, 2nd Edition, 2002.

2. A. V. Aho, J. E. Hopcroft and J. D. Ullman, "Data Structures and Algorithms", Pearson Education, 2nd Edition, 2007

3. Ashok Kamthane, " Data Structures Using C ", Pearson Education, 2nd Edition, 2012.

4. Sahni Horowitz, "Fundamentals of Data Structures in C"Universities Press; Second edition 2008

Thank You