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Introduction

Data Structure

Data Structure and Algorithm

❑ Data Structure (DS)

- ➢ It is arrangement of various types of data in computer memory.
- ➢ It is a way of organizing data item by considering its relationship to each other.

Algorithm + Data Structure = Program

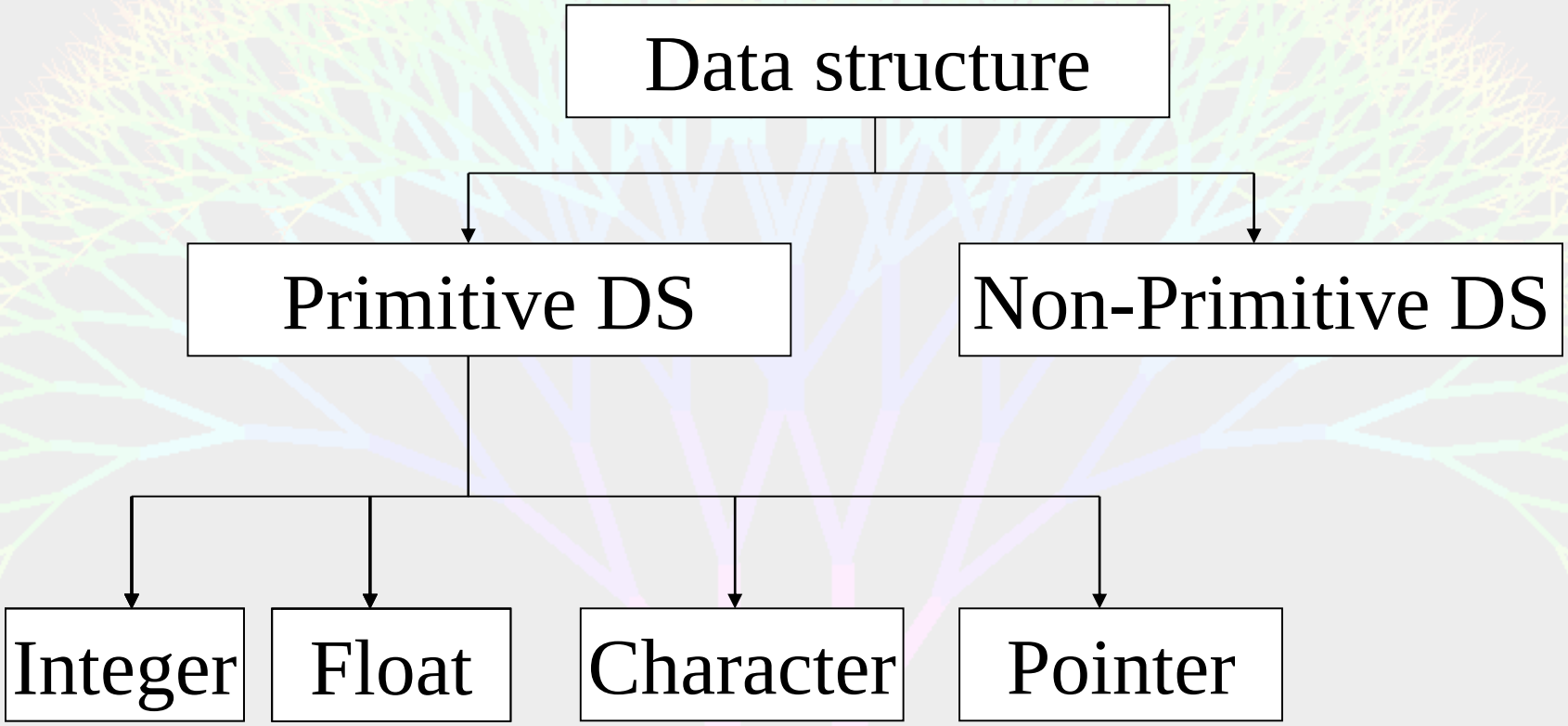
❑ Algorithm

- ➢ Algorithm is a step by step finite sequence of instruction to solve a well defined computational problem.

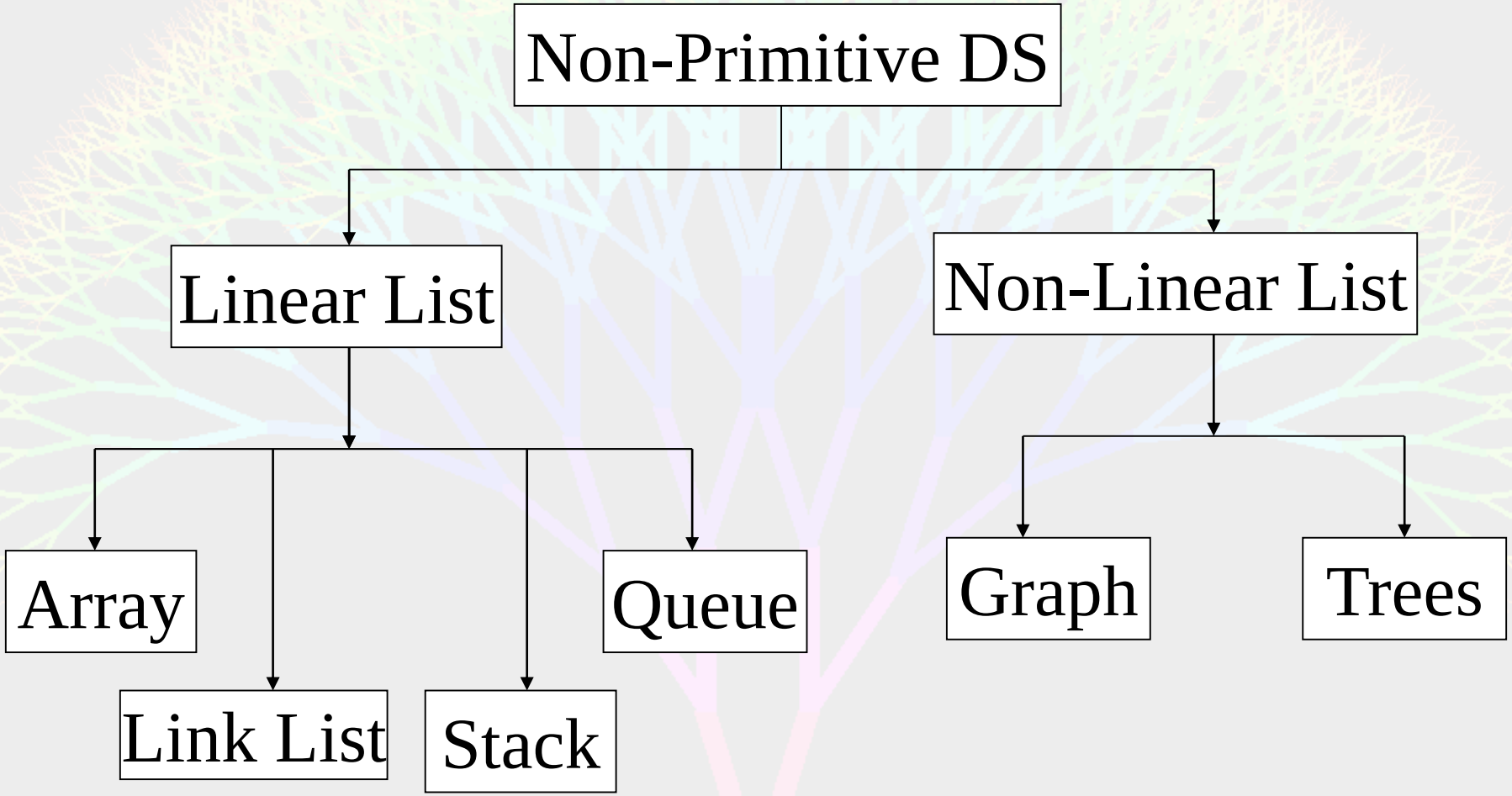
❑ Complexity

- ➢ Time complexity
- ➢ Space complexity

Classification of Data Structure



Classification of Data Structure: Cont.….



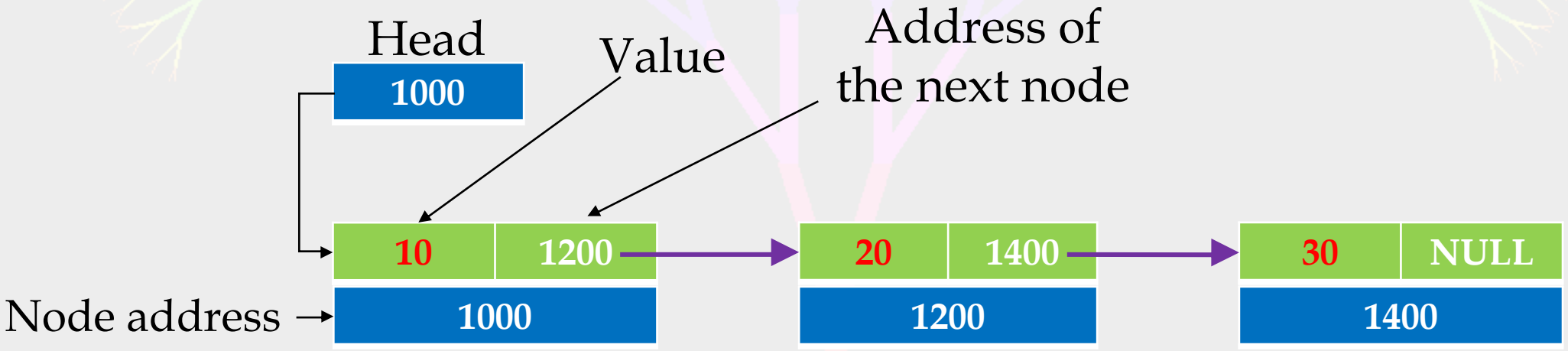
Representation of DS

- Array type data

int A[6], char Mehedi[50], float Hassan[10]

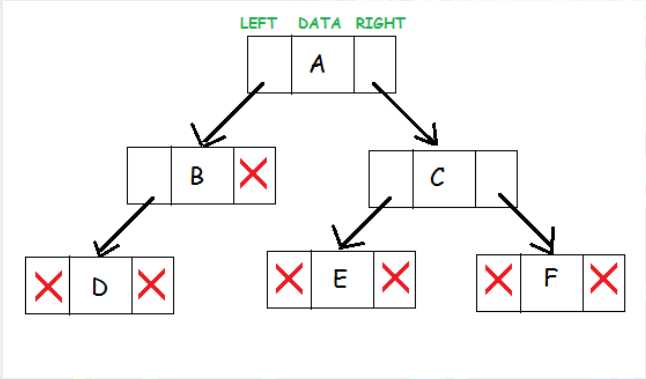
Index →	A [0]	A [1]	A [2]	A [3]	A [4]	A [5]
Value →	10	20	15	25	35	30
Address →	100	102	104	106	108	110

- Linked list type data

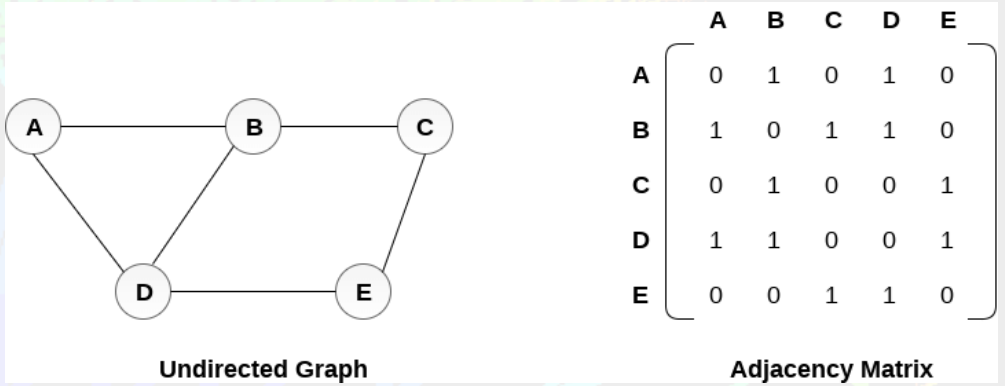


Representation of DS : Cont.....

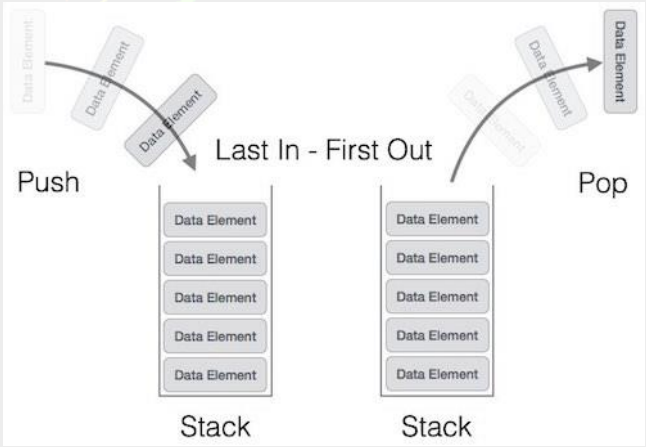
- Tree type data



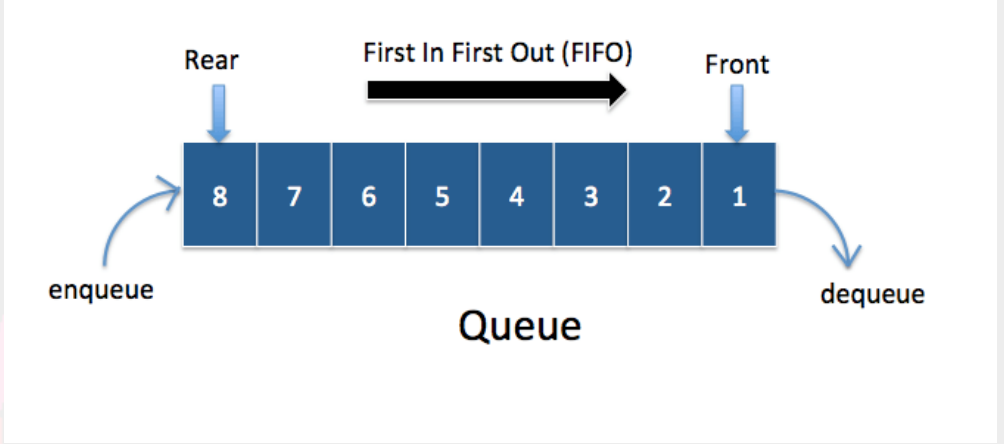
- Graph type data



- Stack type data



- Queue type data



Basic Operation of Data Structure

- Insertion
- Deletion
- Searching
- Sorting
- Traversing
- Merging

Advantage and Disadvantage of DS

Advantage

- It allows information stored on disk very efficiently.
- Allows easier processing of data.
- It is secure way of storage of data
- Using internet, we can access the data anytime from any connected machine (computer, laptop, tablet, phone, etc.)

Disadvantage

- It is applicable only for advanced users.
- If any issue occurs it can be solved only by experts.
- Slow access in case of some data types.

Thank You

Any Question ?