CSN 102: DATA STRUCTURES

Introduction to Course, Classification of Data Structure

What are Data Structures?

- Holds collection of data under one name
- Data stored is linked together
- Real world Eg: Book, Telephone directory
- DS in CS: Array, Stack, Queue, Linked List, Tree, Graph

Need for Data Structures?

- Organizes large amount of data
- Searching and retrieval is efficient
- Eg: Binary Search

Classification of DS(1)

- Based on implementation:
  - Primitive :
    - implemented directly at m/c level
    - Eg: int, float, Char, pointers
  - Non-primitive:
    - Created using primitive DS
    - Eg: Array, Stack, Queue, Graph, Tree

Classification of DS(2)

- Based on Organization:
  - Contiguous :
    - Stored together in memory
    - Access using offset with base address
    - Eg:Array (same data type), Structure (different data type)
  - Non-contiguous:
    - Scattered in memory
    - Access along a path
    - Eg: Linked List, Tree

Course Outcomes

- Stacks, queue, Linked List, Tree, Graph in detail
- Implementation of DS
- Compare algorithms

Course Evaluation

- Quizzes - 4
- Lab assignments - 2
- Mid-Sem
- End-Sem

Examples of each DS

- Stack: Plates in mess, DVD's in DVD holder
- Queue: Queue at movie theatres
- Linked List: Procedures in Govt. offices ☺
- Tree: Genealogy (family-tree), preface of a book
- Graph: flight connectivity between cities