DATA STRUCTURES AND ITS APPLICATIONS

Vandana M L

Department of Computer Science and Engineering

DATA STRUCTURES AND ITS APPLICATIONS

Introduction to Singly Linked List

Vandana M L
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List Data Structure

List

- Dynamic data structure consists of a collection of elements
- Can be implemented in two ways
  - By contiguous memory allocation : ArrayList
  - By Linked Allocation : Linked List

DATA STRUCTURES AND ITS APPLICATIONS

List Data Structure: Operations

- Creating a List
- Inserting an element in a list
- Deleting an element from a list
- Searching a list
- Reversing a list
- Concatenating two lists
- Traversing a list

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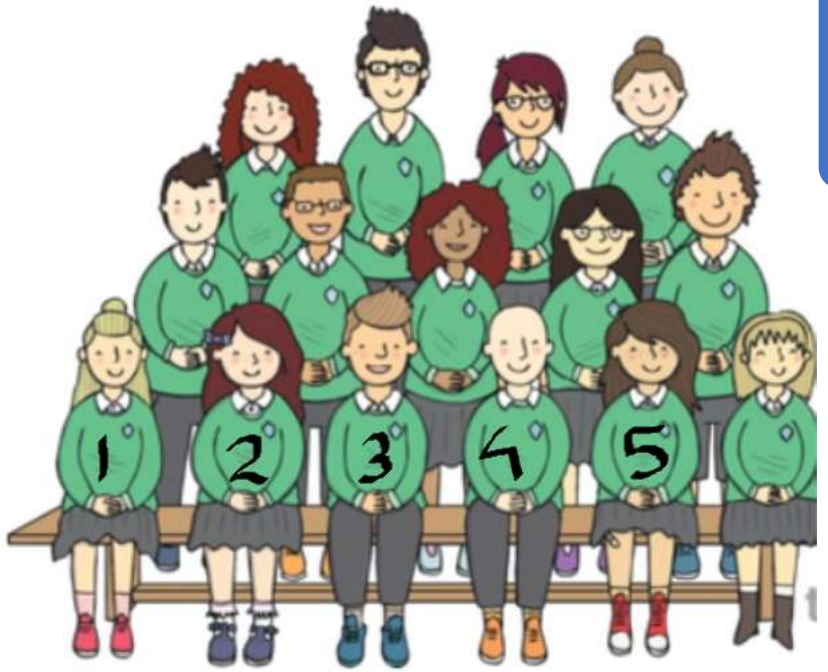
Understanding Array List (Linear List using Arrays)



Placement

- Sequential

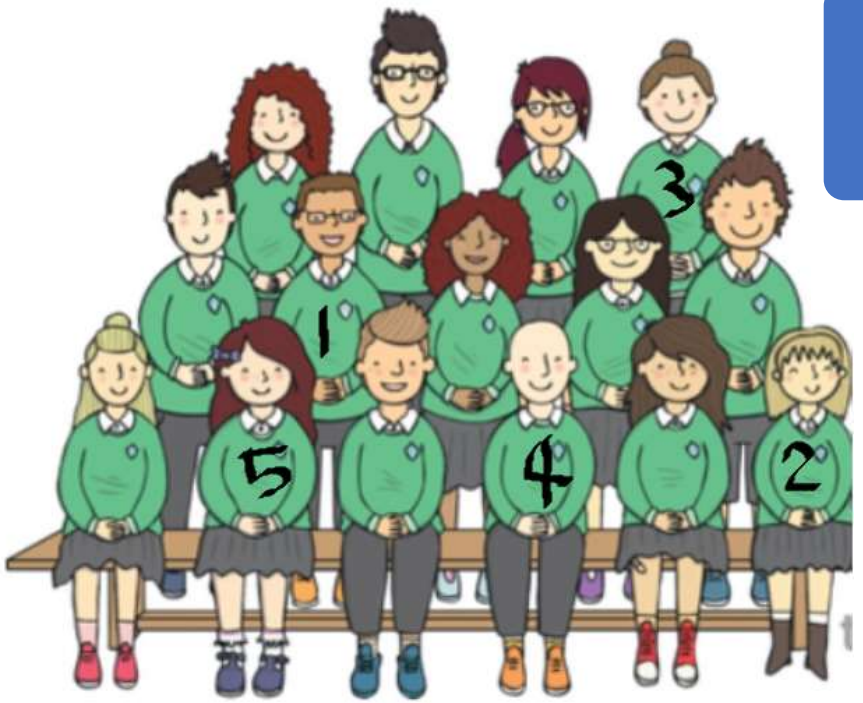
Access

- Sequential

Array List

DATA STRUCTURES AND ITS APPLICATIONS

Understanding Linked List



Placement

- Random

Access

- Sequential

Linked List

Array List Vs Linked List

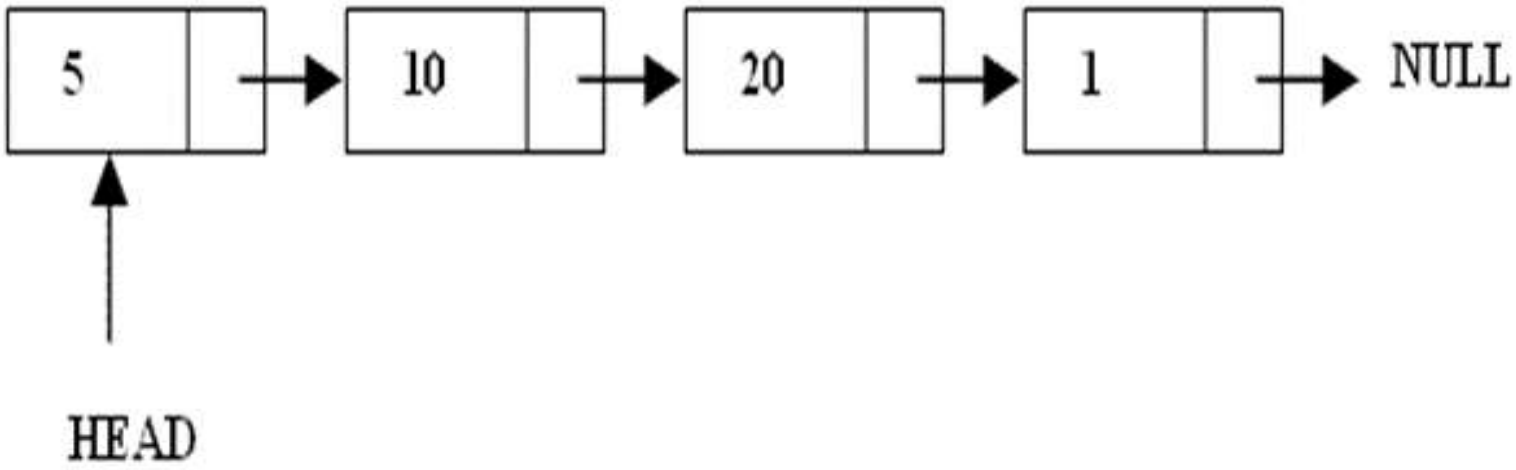
ArrayList	Linked list
Fixed size: Resizing is expensive	Dynamic size
Insertions and Deletions are inefficient	Insertions and Deletions are efficient
Elements in contiguous memory locations	Elements not in contiguous memory locations
May result in memory wasteage if all the allocated space is not used	Since memory is allocated dynamically(as per requirement) there is no wastage of memory.
Sequential and random access is faster	Sequential and random access is slow

Types of Linked List

- Singly Linked List
- Doubly Linked List
- Circular Linked List
- Multi Linked List

Singly Linked List

- A linked list is a linear data structure.
- Nodes make up linked lists.
- Nodes are structures made up of data and a pointer to another node.
- Usually the pointer is called as link.



Single Linked List

- Each node has only one link part
- Each link part contains the address of the next node in the list
- Link part of the last node contains NULL value which signifies the end of the node

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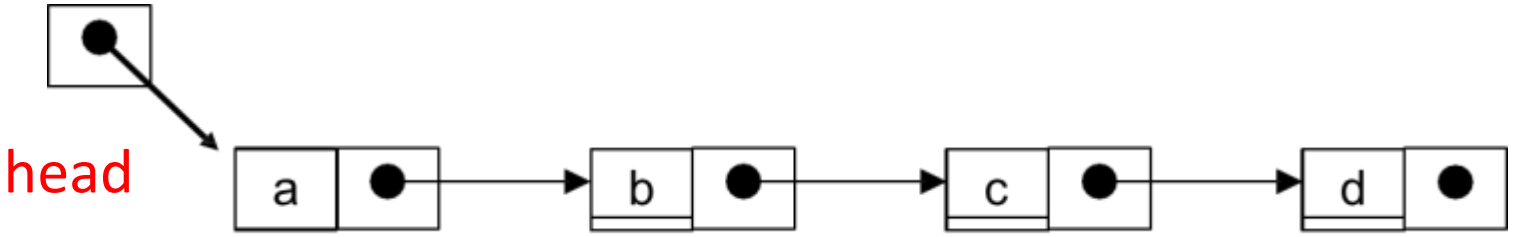
Single Linked List :Schematic representation



- Each node contains a value(data) and a pointer to the next node in the list

- Head/start is a pointer which points at the first node in the list

Singly Linked List

Apply the concepts to answer the following questions

- Give structure definition for node of singly linked list used to store employee data (employee no , name, salary ,designation)

THANK YOU

Vandana M L

Department of Computer Science & Engineering

vandanamd@pes.edu

+91 7411716615