S.Y. B. Tech. Academic Year 2022_23 Trimester: III

Fundamentals of Data Structures

LABORATORY WRITE UP

Experiment Number: 05

TITLE: Singly Linked List Operations

PROBLEM STATEMENT:

Department of Computer Engineering has student's club named 'Pinnacle Club'. Students of second, third and final year of department can be granted membership on request. Similarly, one may cancel the membership of club. First node is reserved for president of club and last node is reserved for the secretary of the club. Write C program to maintain club member ‘s information using singly linked list. Store student PRN and Name. Write functions to: a) Add and delete the members as well as president or even secretary. b) Compute total number of members of club c) Display members d) sorting of two linked list e) merging of two linked list f) Reversing using three pointers

OBJECTIVE:

1. To study data structure: Singly Linked List
2. To Study different operations that could be performed on SLL.
3. To Study Applications of Singly Linked list

THEORY: ***//To be Written by Students***

// Write theory by elaborating below points

Write in brief about Data structure:

- Singly Linked List
- Purpose of Head Node in Singly Linked List
- Various operations on SLL.

IMPLEMENTATION:

- **PLATFORM:**
  - 64-bit Open source Linux or its derivatives.
  - Open Source C Programming tool like gcc/Eclipse Editor.

- **TEST CONDITIONS:-**

1. Input at least five nodes.
2. Insert an element at all positions.
3. Delete an element from all positions.

- **PSEUDO CODE:** ***//To be Written by Students***

  Write pseudo code for create, display, insert, delete, reverse, sort and merge.

- **TIME COMPLEXITY:** ***//To be Written by Students***

  Find out time complexity of above operations

- **CONCLUSION:**

  Thus, implemented different operations on SLL.

- **FAQs** ***//To be Written by Students***

1. Write an ADT for SLL.
2. What are the disadvantages of SLL?
3. Explain an application of SLL.

- **PRACTICE ASSIGNMENTS**

  1. Write a program to concat two SLL.
  2. Write a program to sort elements of SLL by data.