**Institute of Computer Technology**

**B. Tech. Computer Science and Engineering**

**Sub: DS**

**Course Code: 2CSE302**

**Practical – 9**

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**Sem - 3**

**Branch: CS**

**Class: A**

**Batch: 32**

**Problem Definition-1:** Write a program in C/C++ to create and display a Doubly Linked List.

**Code:**

#include <stdio.h>

#include <stdlib.h>

*// Definition of a Node in the Doubly Linked List*

struct ListNode {

    int value;

    struct ListNode\* previous;

    struct ListNode\* next;

};

*// Function to create a new node*

struct ListNode\* createNewNode(int value) {

    struct ListNode\* newNode = (struct ListNode\*)malloc(sizeof(struct ListNode));

    newNode->value = value;

    newNode->previous = NULL;

    newNode->next = NULL;

    return newNode;

}

*// Function to add a node at the end of the list*

void addNodeAtEnd(struct ListNode\*\* head\_ptr, int value) {

    struct ListNode\* newNode = createNewNode(value);

    struct ListNode\* current = \*head\_ptr;

    if (\*head\_ptr == NULL) {

        \*head\_ptr = newNode;

        return;

    }

    while (current->next != NULL)

        current = current->next;

    current->next = newNode;

    newNode->previous = current;

}

*// Function to print the doubly linked list*

void displayList(struct ListNode\* current) {

    printf("NULL > ");

    while (current != NULL) {

        printf("%d > ", current->value);

        current = current->next;

    }

    printf("NULL\n");

}

int main() {

    struct ListNode\* start = NULL;

    int count, element;

*// Taking input for the number of elements*

    printf("Enter the number of nodes: ");

    scanf("%d", &count);

*// Taking input for each element*

    for (int i = 0; i < count; i++) {

        printf("Enter data for node %d: ", i + 1);

        scanf("%d", &element);

        addNodeAtEnd(&start, element);

    }

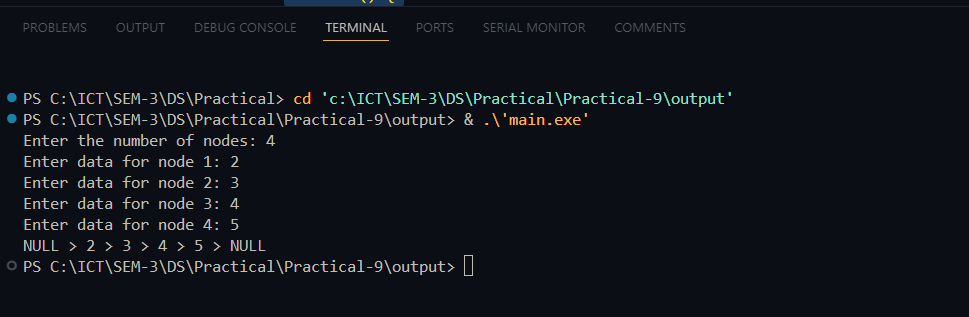
*// Display the list*

    displayList(start);

    return 0;

}

**Output:**

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