Rajalakshmi Engineering College

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NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 2_COD_Question 4

Attempt : 1
Total Mark : 10
Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Ravi is developing a student registration system for a college. To efficiently store and manage the student IDs, he decides to implement a doubly linked list where each node represents a student's ID.

In this system, each student's ID is stored sequentially, and the system needs to display all registered student IDs in the order they were entered.

Implement a program that creates a doubly linked list, inserts student IDs, and displays them in the same order.

Input Format

The first line contains an integer N the number of student IDs.

The second line contains N space-separated integers representing the student IDs.

Output Format

The output should display the single line containing N space-separated integers representing the student IDs stored in the doubly linked list.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 5
10 20 30 40 50
Output: 10 20 30 40 50

Answer

```c
// You are using GCC
#include <stdio.h>
#include <stdlib.h>

struct Node {
    int data;
    struct Node* prev;
    struct Node* next;
};

void insertAtEnd(struct Node** head, int data) {
    struct Node* newNode = (struct Node*)malloc(sizeof(struct Node));
    newNode->data = data;
    newNode->prev = NULL;
    newNode->next = NULL;

    if (*head == NULL) {
        *head = newNode;
        return;
    }

    struct Node* temp = *head;
    while (temp->next != NULL)
        temp = temp->next;
```

```c
        temp->next = newNode;
        newNode->prev = temp;
    }

    void display(struct Node* head) {
        struct Node* temp = head;
        while (temp != NULL) {
            printf("%d", temp->data);
            if (temp->next != NULL) printf(" ");
            temp = temp->next;
        }
    }

    int main() {
        int n, id;
        struct Node* head = NULL;

        scanf("%d", &n);
        for (int i = 0; i < n; i++) {
            scanf("%d", &id);
            insertAtEnd(&head, id);
        }

        display(head);
        return 0;
    }
```

Status : Correct   *Marks : 10/10*