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

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

// Define the node structure
struct node {
    int id;
    struct node* prev;
    struct node* next;
};

// Head pointer for the list
struct node* head = NULL;

// Function to create a new node
struct node* createNode(int id) {
    struct node* newNode = (struct node*)malloc(sizeof(struct node));
    newNode->id = id;
    newNode->prev = NULL;
    newNode->next = NULL;
    return newNode;
}

// Function to insert a node at the end
```

```
void insertAtEnd(int id) {
    struct node* newNode = createNode(id);

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

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

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

// Function to display all student IDs
void display() {
    struct node* temp = head;
    while (temp != NULL) {
        printf("%d ", temp->id);
        temp = temp->next;
    }
    printf("\n");
}

// Main function
int main() {
    int n, id;
    scanf("%d", &n);

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

    display();

    return 0;
}
```

Status : Correct ***Marks : 10/10***