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

```
#include <stdio.h>
#include <stdlib.h>

// Define a node in the doubly linked list
typedef struct Node {
   int data;
   struct Node* prev;
   struct Node* next;
} Node;

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

// Function to insert a node at the end of the list
void insertAtEnd(Node** head, int data) {
   Node* newNode = createNode(data);
   if (*head == NULL) {
      *head = newNode;
      return;
```

```
    }
    Node* temp = *head;
    while (temp->next != NULL)
        temp = temp->next;
    temp->next = newNode;
    newNode->prev = temp;
}

// Function to display the list
void displayList(Node* head) {
    while (head != NULL) {
        printf("%d ", head->data);
        head = head->next;
    }
    printf("\n");
}

int main() {
    int N, id;
    scanf("%d", &N);

    Node* head = NULL;

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

    displayList(head);

    return 0;
}
```

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