

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>
```

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

```
Node* createNode(int data){  
    Node* newNode = (Node*)malloc(sizeof(Node));  
    newNode->data = data;  
    newNode->prev = newNode->next= NULL;  
    return newNode;  
}
```

```
void append(Node** head, Node** tail,int data){  
    Node* newNode = createNode(data);  
    if (*head ==NULL){  
        *head = *tail= newNode;  
    } else {  
        (*tail)->next = newNode;  
        newNode->prev=*tail;  
        *tail = newNode;
```

```

    }
}

void displayList(Node* head) {
    Node* temp=head;
    while (temp != NULL){
        printf("%d ", temp->data);
        temp = temp->next;
    }
    printf("\n");
}

```

```

int main(){
    int n, value;
    Node* head=NULL;
    Node* tail=NULL;

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

    displayList(head);

    Node* temp;
    while (head != NULL){
        temp=head;
        head= head->next;
        free(temp);
    }
    return 0;
}

```

Status : Correct

Marks : 10/10