# 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 student_id;
    struct Node* prev;
    struct Node* next;
} Node;

Node* create_node(int student_id) {
    Node* new_node = (Node*)malloc(sizeof(Node));
    new_node->student_id = student_id;
    new_node->prev = NULL;
    new_node->next = NULL;
    return new_node;
}

Node* insert_end(Node* head, int student_id) {
    Node* new_node = create_node(student_id);

    if (head == NULL) {
        return new_node;
    }
```

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

    temp->next = new_node;
    new_node->prev = temp;

    return head;
}

void display_list(Node* head) {
    Node* temp = head;
    while (temp != NULL) {
        printf("%d ", temp->student_id);
        temp = temp->next;
    }
}

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

    int student_id;
    Node* head = NULL;

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

    display_list(head);
    printf("\n");

    return 0;
}
```

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