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NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 3_CY

Attempt : 1
Total Mark : 30
Marks Obtained : 30

Section 1 : Coding

1. Problem Statement

You are required to implement a stack data structure using a singly linked list that follows the Last In, First Out (LIFO) principle.

The stack should support the following operations: push, pop, display, and peek.

Input Format

The input consists of four space-separated integers N, representing the elements to be pushed onto the stack.

Output Format

The first line of output displays all four elements in a single line separated by a space. The second line of output is left blank to indicate the pop operation without displaying anything.

The third line of output displays the space separated stack elements in the same line after the pop operation.

The fourth line of output displays the top element of the stack using the peek operation.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 11 22 33 44
Output: 44 33 22 11

33 22 11 33

Answer

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

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

struct Node* top = NULL;

void push(int value) {
```

```
    struct Node*                        newNode =                   (struct

Node*)malloc(sizeof(struct Node));     if                           (!newNode)
return;     newNode->data = value;     newNode-                     >next = top;
    top = newNode;
}
void pop() {
    if (top == NULL) return;     struct Node* temp =                top;     top =
top->next;     free(temp); }


int peek() {     if (top != NULL) return top->data;
return -1; }


void display() {     struct Node* current = top;
while (current != NULL) {        printf("%d ", current-
>data);
        current = current->next;
    }
    printf("\n"); }

int main() {
    int a, b, c, d;
    scanf("%d %d %d                     %d", &a, &b,
&c, &d);


    push(a);     push(b);
push(c);     push(d);     display();

    pop();


    printf("\n");
```

```
    display();

                printf("%d\n", peek());
    return 0; }
```

Status : Correct *Marks : 10/10*