

Rajalakshmi Engineering College

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Department: I AI & DS FD

Batch: 2028

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NeoColab_REC_CS23231_DATA STRUCTURES

REC_DS using C_Week 3_COD_Question 5

Attempt : 1

Total Mark : 10

Marks Obtained : 10

Section 1 : Coding

1. Problem Statement

Milton is a diligent clerk at a school who has been assigned the task of managing class schedules. The school has various sections, and Milton needs to keep track of the class schedules for each section using a stack-based system.

He uses a program that allows him to push, pop, and display class schedules for each section. Milton's program uses a stack data structure, and each class schedule is represented as a character. Help him write a program using a linked list.

Input Format

The input consists of integers corresponding to the operation that needs to be performed:

Choice 1: Push the character onto the stack. If the choice is 1, the following input is a space-separated character, representing the class schedule to be pushed onto the stack.

Choice 2: Pop class schedule from the stack

Choice 3: Display the class schedules in the stack.

Choice 4: Exit the program.

Output Format

The output displays messages according to the choice and the status of the stack:

- If the choice is 1, push the given class schedule to the stack and display the following: "Adding Section: [class schedule]"
- If the choice is 2, pop the class schedule from the stack and display the following: "Removing Section: [class schedule]"
- If the choice is 2, and if the stack is empty without any class schedules, print "Stack is empty. Cannot pop."
- If the choice is 3, print the class schedules in the stack in the following: "Enrolled Sections: " followed by the class schedules separated by space.
- If the choice is 3, and there are no class schedules in the stack, print "Stack is empty"
- If the choice is 4, exit the program and display the following: "Exiting the program"
- If any other choice is entered, print "Invalid choice"

Refer to the sample output for the exact format.

Sample Test Case

Input: 1 d

1 h

3

2

3

4

Output: Adding Section: d

Adding Section: h

Enrolled Sections: h d

Removing Section: h

Enrolled Sections: d

Exiting program

Answer

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

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

```
struct Node {  
    char data;  
    struct Node* next;  
};
```

```
struct Node* top = NULL;
```

```
void push(char value) {  
    struct Node*newnode=(struct Node*)malloc(sizeof(struct Node));  
    newnode->data=value;  
    newnode->next=top;  
    top=newnode;  
    printf("Adding Section:%c\n",value);  
}
```

```
void pop() {  
    if(top==NULL)  
    {  
        printf("Stack is empty.Cannot pop.\n");  
    }  
    else  
    {  
        struct Node*temp=top;  
        char removed=temp->data;  
        top=top->next;  
        free(temp);  
        printf("Removing Section:%c\n",removed);  
    }  
}
```

```
void displayStack() {
```

```

if(top==NULL)
{
    printf("Stack is empty\n");
}
else
{
    struct Node*current=top;
    printf("Enrolled Sections: ");
    while(current!=NULL)
    {
        printf("%c ",current->data);
        current=current->next;
    }
    printf("\n");
}
}

int main() {
    int choice;
    char value;
    do {
        scanf("%d", &choice);
        switch (choice) {
            case 1:
                scanf(" %c", &value);
                push(value);
                break;
            case 2:
                pop();
                break;
            case 3:
                displayStack();
                break;
            case 4:
                printf("Exiting program\n");
                break;
            default:
                printf("Invalid choice\n");
        }
    } while (choice != 4);
    return 0;
}

```

Status : Correct

Marks : 10/10