Rajalakshmi Engineering College

Name: Jishnu Raj
Email: 241801109@rajalakshmi.edu.in
Roll no: 241801109
Phone: 9342455706
Branch: REC
Department: I AI & DS FB
Batch: 2028
Degree: B.E - AI & DS

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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;

// You are using GCC
void push(char value) {
   //Type your code here     struct Node* newNode=(struct
Node*)malloc(sizeof(struct Node));     if(newNode==NULL){
printf("Stack Overflow\n");         return;


   }
   newNode->data=value;
   newNode->next=top;
top=newNode;
   printf("Adding Section: %c\n",value);
}

void pop() {
   //Type your code here
if(top==NULL){
      printf("Stack is empty.Cannot
pop.\n");       return;
   }
   struct Node* temp=top;
   printf("Removing Section: %c\n",temp->data);
```

```
   top=top->next;
free(temp);
}

void displayStack() {
   //Type your code here
if(top==NULL){
printf("Stack is empty\n");
return;
   }
   struct Node* temp=top;
printf("Enrolled Sections:");
while(temp!=NULL){
printf("%c",temp->data);
      temp=temp->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***