Rajalakshmi Engineering College

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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;
```

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

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

Node* top = NULL;

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

void pop() {
```

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

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

int main() {
    int choice;
    char ch;
    while (1) {
        if (scanf("%d", &choice) != 1) break;
        if (choice == 1) {
            scanf(" %c", &ch);
            if (isalpha(ch)) {
                push(ch);
            }
        } else if (choice == 2) {
            pop();
        } else if (choice == 3) {
            display();
        } else if (choice == 4) {
            printf("Exiting program\n");
            break;
        } else {
```

```
            printf("Invalid choice\n");
        }
    }
    return 0;
}
// You are using GCC
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***