

# 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;
```

```
// You are using GCC
```

```
typedef struct Node stack;
```

```
int isempty()
```

```
{
```

```
    if(top==NULL)
```

```
        return 1;
```

```
    else
```

```
        return 0;
```

```
}
```

```
void push(char value) {
```

```
    //Type your code here
```

```
    stack*newnode =(stack*)malloc(sizeof(stack));
```

```
    newnode->data=value;
```

```
    if(isempty()){
```

```
        newnode->next=NULL;
```

```
    }
```

```
    else
```

```
        { newnode->next=top;}
```

```
    top=newnode;
```

```
    printf("Adding Section: %c\n",top->data);
```

```
}
```

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

```
void displayStack() {
    //Type your code here
    if(isempty())
    {printf("Stack is empty\n");
    }
    else
    {
        stack*position;
        position=top;
        printf("Enrolled Sections: ");
        while(position != NULL)
        {
            printf("%c ",position->data);
            position=position->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