

CollegeWork\DataStructure\stack-using-linkedlist.c

```
1 //wirite a program to implement stack using linked list.
2
3 #include <stdio.h>
4 #include <stdlib.h>
5
6 struct node {
7     int data;
8     struct node *next;
9 };
10
11 void push(struct node **head, int new_data) {
12     struct node *new_node = (struct node *)malloc(sizeof(struct node));
13     new_node->data = new_data;
14     new_node->next = *head;
15     *head = new_node;
16 }
17
18 int pop(struct node **head) {
19     struct node *temp = *head;
20     int data = (*head)->data;
21     *head = temp->next;
22     free(temp);
23     return data;
24 }
25
26
27 void display(struct node *head) {
28     struct node *temp = head;
29
30     while (temp != NULL) {
31         printf("%d ", temp->data);
32         temp = temp->next;
33     }
34     printf("\n");
35 }
36
37 void end(struct node *head){
38     free(head);
39     exit(0);
40 }
41
42 int main(){
43     int op, data;
44     struct node* head = NULL;
45     while(1){
46         printf("1.Push, 2.Pop, 3.Display, 4.Exit.\nEnter Your choice: ");
47         scanf("%d",&op);
48         switch(op){
49             case 1:
50                 printf("Enter data of node: ");
51                 scanf("%d",&data);
52                 push(&head, data);
53                 break;
54             case 2:
55                 if(head == NULL){
56                     printf("Underflow.\n");
57                 }else{
```

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58         printf("Removed element is %d\n",pop(&head));
59     }
60     break;
61 case 3:
62     if(head == NULL){
63         printf("Stack is Empty.\n");
64     }else{
65         printf("The elements of stack are: ");
66         display(head);
67     }
68     break;
69 case 4:
70     end(head);
71 default:
72     printf("Invalid Input.\n");
73 }
74 }
75 return 0;
76 }
77

```

OUTPUT

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79
80 PS S:\WorkSpace\CollegeWork\DataStructure> gcc .\stack-using-linkedlist.c
81 PS S:\WorkSpace\CollegeWork\DataStructure> ./a
82 1.Push, 2.Pop, 3.Display, 4.Exit.
83 Enter Your choice: 1
84 Enter data of node: 12
85 1.Push, 2.Pop, 3.Display, 4.Exit.
86 Enter Your choice: 1
87 Enter data of node: 13
88 1.Push, 2.Pop, 3.Display, 4.Exit.
89 Enter Your choice: 1
90 Enter data of node: 14
91 1.Push, 2.Pop, 3.Display, 4.Exit.
92 Enter Your choice: 3
93 The elements of stack are: 14 13 12
94 1.Push, 2.Pop, 3.Display, 4.Exit.
95 Enter Your choice: 2
96 Removed element is 14
97 1.Push, 2.Pop, 3.Display, 4.Exit.
98 Enter Your choice: 2
99 Removed element is 13
100 1.Push, 2.Pop, 3.Display, 4.Exit.
101 Enter Your choice: 3
102 The elements of stack are: 12
103 1.Push, 2.Pop, 3.Display, 4.Exit.
104 Enter Your choice: 2
105 Removed element is 12
106 1.Push, 2.Pop, 3.Display, 4.Exit.
107 Enter Your choice: 2
108 Underflow.
109 1.Push, 2.Pop, 3.Display, 4.Exit.
110 Enter Your choice: 3
111 Stack is Empty.
112 1.Push, 2.Pop, 3.Display, 4.Exit.
113 Enter Your choice: 4
114 PS S:\WorkSpace\CollegeWork\DataStructure>

```