Name - Sanjoy Saha

Stream - Computer Science & Engineering

Sec - A

Roll no. - 3

University Roll no. :- 10900120003

Subject - DSA Lab

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

struct node
{
 int info;
 struct node *link;
}*top=NULL;

void push(int item);
int pop();
int peek();
int isEmpty();
void display();

int main()
{
    int choice,item;
    while(1)
    {
        printf("\n1.Push\n");
        printf("2.Pop\n");
        printf("3.Display item at the top\n");
        printf("4.Display all items of the stack\n");
        printf("5.Quit\n");
        printf("\nEnter your choice : ") ;
        scanf("%d", &choice);

        switch(choice)
        {
```

```c
31                  case 1:
32                          printf("\nEnter the item to be pushed : ");
33                          scanf("%d",&item);
34                          push(item);
35                          break;
36                  case 2:
37                          item=pop();
38                          printf("\nPopped item is : %d\n",item);
39                          break;
40                  case 3:
41                          printf("\nItem at the top is %d\n",peek());
42                          break;
43                  case 4:
44                          display();
45                          break;
46                  case 5:
47                          exit(1);
48                  default :
49                          printf("\nWrong choice\n");
50                  }
51              }
52      }
53      void push(int item)
54      {
55          struct node *tmp;
56          tmp=(struct node *)malloc(sizeof(struct node));
57          if(tmp==NULL)
58          {
59                  printf("\nStack Overflow\n");
60                  return;
```

```c
54  {
55          struct node *tmp;
56          tmp=(struct node *)malloc(sizeof(struct node));
57          if(tmp==NULL)
58          {
59                  printf("\nStack Overflow\n");
60                  return;
61          }
62          tmp->info=item;
63          tmp->link=top;
64          top=tmp;
65  }
66  int pop()
67  {
68          struct node *tmp;
69          int item;
70          if( isEmpty() )
71          {
72                  printf("\nStack Underflow\n");
73                  exit(1);
74          }
75          tmp=top;
76          item=tmp->info;
77          top=top->link;
78          free(tmp);
79          return item;
80  }
81  int peek()
82  {
83          if( isEmpty() )
```

```c
 84                {
 85                        printf("\nStack Underflow\n");
 86                        exit(1);
 87                }
 88                return top->info;
 89        }
 90
 91        int isEmpty()
 92        {
 93                if(top == NULL)
 94                        return 1;
 95                else
 96                        return 0;
 97        }
 98        void display()
 99        {
100                struct node *ptr;
101                ptr=top;
102                if(isEmpty())
103                {
104                        printf("\nStack is empty\n");
105                        return;
106                }
107                printf("\nStack elements :\n\n");
108                while(ptr!=NULL)
109                {
110                        printf(" %d\n",ptr->info);
111                        ptr=ptr->link;
112                }
113                printf("\n");
```

```
PS C:\Users\lenovo\Desktop\C DSA lab> cd "c:\Users\lenovo\Desktop\C DSA lab\" ; if ($?) { gcc stackusinglinkedlist.c -o stackusinglinkedlist

1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 1

Enter the item to be pushed : 12

1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 1

Enter the item to be pushed : 345

1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 1

Enter the item to be pushed : 6789
```

```
1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 1

Enter the item to be pushed : 12345

1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 4

Stack elements :

 12345
 6789
 345
 12


1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 3

Item at the top is 12345
```

```
1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 2

Popped item is : 12345

1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 2

Popped item is : 6789

1.Push
2.Pop
3.Display item at the top
4.Display all items of the stack
5.Quit

Enter your choice : 4

Stack elements :

 345
 12
```