

```
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Run Debug Stop Share Save {} Beautify input
enter the choice
1
enter an item to be entered
2
enter the choice
1
enter an item to be entered
3
enter the choice
1
enter an item to be entered
4
enter the choice
1
enter an item to be entered
4
stack overflow
enter the choice
3
contents o the stack are:
4
3
2
enter the choice
2
item deleted is 4
enter the choice
3
```

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Language C

main.c

```
1 #include<stdio.h>
2 #include<conio.h>
3 #include<stdlib.h>
4 #define STACK_SIZE 5
5 int top=-1;
6 int s[10];
7 int item;
8
9 void push()
10 {
11     if(top == STACK_SIZE-1)
12     {
13         printf("stack overflow \n");
14         return;
15     }
16     top++;
17     s[top]= item;
18 }
19
20 int pop()
21 {
22     if(top==-1)
23     {
24         return -1;
25     }
26     return s[top--];
27 }
28
29 void display()
```

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Language C

```
main.c
29 void display()
30 {
31     int i;
32     if(top == -1)
33     {
34         printf("empty \n");
35         return;
36     }
37     printf("contents of the stack are: \n");
38     for(i=0; i<=top; i++)
39         printf("%d \t", s[i]);
40 }
41
42 void main()
43 {
44     int item_deleted, choice;
45     for(;;)
46     {
47         printf("enter the choice \n");
48         scanf("%d", &choice);
49         switch(choice)
50         {
51             case 1: printf("enter an item to be entered \n");
52                     scanf("%d", &item);
53                     push();
54                     break;
55             case 2: item_deleted = pop();
56                     if (item_deleted == -1)
57                     {
```

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Language C

main.c

```
44 int item_deleted, choice;
45 for(;;)
46 {
47     printf("enter the choice \n");
48     scanf("%d", &choice);
49     switch(choice)
50     {
51         case 1: printf("enter an item to be entered \n");
52                 scanf("%d", &item);
53                 push();
54                 break;
55         case 2: item_deleted= pop();
56                 if (item_deleted == -1)
57                 {
58                     printf("empty stack \n");
59                 }
60                 else
61                 {
62                     printf("item deleted is %d \n", item_deleted);
63                 }
64                 break;
65         case 3: display();
66                 break;
67         default: printf("invalid choice \n");
68                  exit(0);
69     }
70 }
71
72 }
```

LAB PROGRAM - 1.

Write a program to simulate the working of stack using an array with the following

- push
- pop
- display

The program should print appropriate messages for 'overflow' and 'underflow'.

```
#include <stdio.h>
#include <conio.h>
#include <stdlib.h>
#define STACK_SIZE 5
int top = -1;
int S[10];
int item;
```

```
void push()
```

```
{
```

```
if (top == stack STACK_SIZE - 1)
```

```
{
    printf("Overflow\n");
    return;
```

```
}
top++;
```

```
S[top] = item;
```

```
}
```

```
int pop()
```

```
{
```

```
if (top == -1)
```

```
{
```

```
return -1;
```

```
}
```

```
return S[top--];
```

```
}
```



```
void display()
```

```
{
```

```
    int i;
```

```
    if (top == -1)
```

```
    { printf("empty\n");
```

```
      return;
```

```
    }
```

```
    printf("Contents of the stack are\n");
```

```
    for (i = 0; i <= top; i++)
```

```
        printf("%d\t", s[i]);
```

```
}
```

```
void main()
```

```
{
```

```
    int item_deleted, choice;
```

```
    scanf("%d", &choice);
```

```
    switch(choice)
```

```
    {
```

```
        case 1: printf("Enter an item to be entered\n");
```

```
                scanf("%d", &item);
```

```
                push();
```

```
                break;
```

```
        case 2: item_deleted = pop();
```

```
                if (item_deleted == -1)
```

```
                    printf("underflow");
```

```
                else
```

```
                    printf("%d", item_deleted);
```

```
                break;
```

```
        case 3: display();
```

```
                break;
```

```
        default: exit(0);
```

```
}
```

```
}
```


Enter a choice

1

Enter an item to be entered.

2

Enter a choice

1

Enter an item to be entered

3.

Enter a choice

1.

Enter an item to be entered.

4.

Enter a choice

2.

The item deleted is 4.

Enter a choice 3.

2 3

Enter a choice

1

Enter an item to be entered.

4.

Enter a choice

1.

Enter an item to be entered.

5.

Enter an item to be entered choice.

1.

Enter an item to be entered.

6.

Enter a choice

1.

Enter an item to be entered

7.

underflow.