

Program 1:

```
1 #include <stdio.h>
2 #define MAX 10
3
4 int s[MAX];
5 int top = -1;
6
7 void push(int v) {
8     if (top >= MAX - 1) {
9         printf("Stack Overflow\n");
10    } else {
11        s[++top] = v;
12        printf("pushed to stack %d \n", v);
13    }
14 }
15
16 void pop() {
17     if (top < 0) {
18         printf("Stack Underflow\n");
19     } else {
20         printf("popped from stack %d\n", s[top--]);
21     }
22 }
23
24 void display() {
25     if (top < 0) {
26         printf("Stack is empty\n");
27     } else {
28         printf("Stack elements:\n");
29     }
30     int i;
31     for (i = top; i >= 0; i--) {
32         printf("%d\n", s[i]);
33     }
34 }
35
36 int main() {
37     int choice, value;
38     while (1) {
39         printf("\n1. Push\n2. Pop\n3. Display\n4. Exit\nEnter your choice: ");
40         scanf("%d", &choice);
41         switch (choice) {
42             case 1:
43                 printf("Enter value to push: ");
44                 scanf("%d", &value);
45                 push(value);
46                 break;
47             case 2:
48                 pop();
49                 break;
50             case 3:
51                 display();
52                 break;
53             case 4:
54                 return 0;
55             default:
56                 printf("Invalid choice\n");
57         }
58     }
59 }
```

Output:

```
C:\Users\ANU\OneDrive\Desk
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 1
Enter value to push: 23
pushed to stack 23

1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 1
Enter value to push: 24
pushed to stack 24

1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 1
Enter value to push: 25
pushed to stack 25
```

```
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 2
popped from stack 25
```

```
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 3
Stack elements:
24
23
```

```
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 4
```

```
-----
Process exited after 210.2 seconds with return value 0
Press any key to continue . . .
```