

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

- a) Push
- b) Pop
- c) Display

The program should print appropriate messages for stack overflow, stack underflow

C:\Users\apurv\Documents\c_programs\p1.cpp - [Executing] - Dev-C++ 5.11

```
1 #include <stdio.h>
2 #include <stdlib.h>
3 |
4 #define MAX 5
5
6 int stack [ MAX ];
7 int top = -1;
8
9 void push (int x) {
10    if (top == MAX - 1) {
11        printf ("Stack Overflow! Cannot push %d\n", x);
12    } else {
13        top++;
14        stack [ top ] = x;
15        printf ("%d pushed to stack\n", x);
16    }
17}
18
19 void pop () {
20    if (top == -1) {
21        printf ("Stack Underflow! No element to pop\n");
22    } else {
23        printf ("Popped element: %d\n", stack [ top ]);
24        top--;
25    }
26}
27
28 void display () {
29}
30
31
32
33
34
35
36
37
38 int main () {
39    int choice , value ;
40
41    while (1) {
42        printf ("1. Push\n2. Pop\n3. Display\n4. Exit\nEnter your choice: ");
43        scanf ("%d" , &choice );
44
45        switch (choice ) {
46            case 1:
47                printf ("Enter value to push: ");
48                scanf ("%d" , &value );
49                push (value );
50                break;
51
52            case 2:
53                pop ();
54                break;
55        }
56    }
57}
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\Users\apurv\Documents\c_programs\p1.exe
- Output Size: 129.8701171875 KiB
- Compilation Time: 0.36s

Line: 3 Col: 1 Sel: 0 Lines: 70 Length: 1355 Insert Done parsing in 0.063 seconds

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21        printf ("Stack Underflow! No element to pop\n");
22    } else {
23        printf ("Popped element: %d\n", stack [ top ]);
24        top--;
25    }
26}
27
28 void display () {
29    if (top == -1) {
30        printf ("Stack is empty\n");
31    } else {
32        for (int i = top ; i >= 0 ; i--) {
33            printf ("%d\n" , stack [ i ]);
34        }
35    }
36}
37
38 int main () {
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41    while (1) {
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TDM-GCC 4.9.2 64-bit Release

(globals)

Project Classes Debug Untitled1.cpp p1.cpp

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43     scanf ("%d", &choice);
44
45     switch (choice) {
46         case 1:
47             printf ("Enter value to push: ");
48             scanf ("%d", &value);
49             push (value);
50             break;
51
52         case 2:
53             pop ();
54             break;
55
56         case 3:
57             display ();
58             break;
59
60         case 4:
61             exit (0);
62
63         default:
64             printf ("Invalid choice\n");
65
66     }
67
68     return 0;
69 }
```

Compiler Resources Compile Log Debug Find Results Close

Abort Compilation

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```
C:\Users\apurv\Documents\c_programs\pt1.exe
1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 1
Enter value to push: 34
34 pushed to stack

1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 1
Enter value to push: 45
45 pushed to stack

1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 1
Enter value to push: 13
13 pushed to stack

1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 2
Popped element: 13

1. Push
2. Pop
3. Display
4. Exit
Enter your choice: 3
45
34

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

