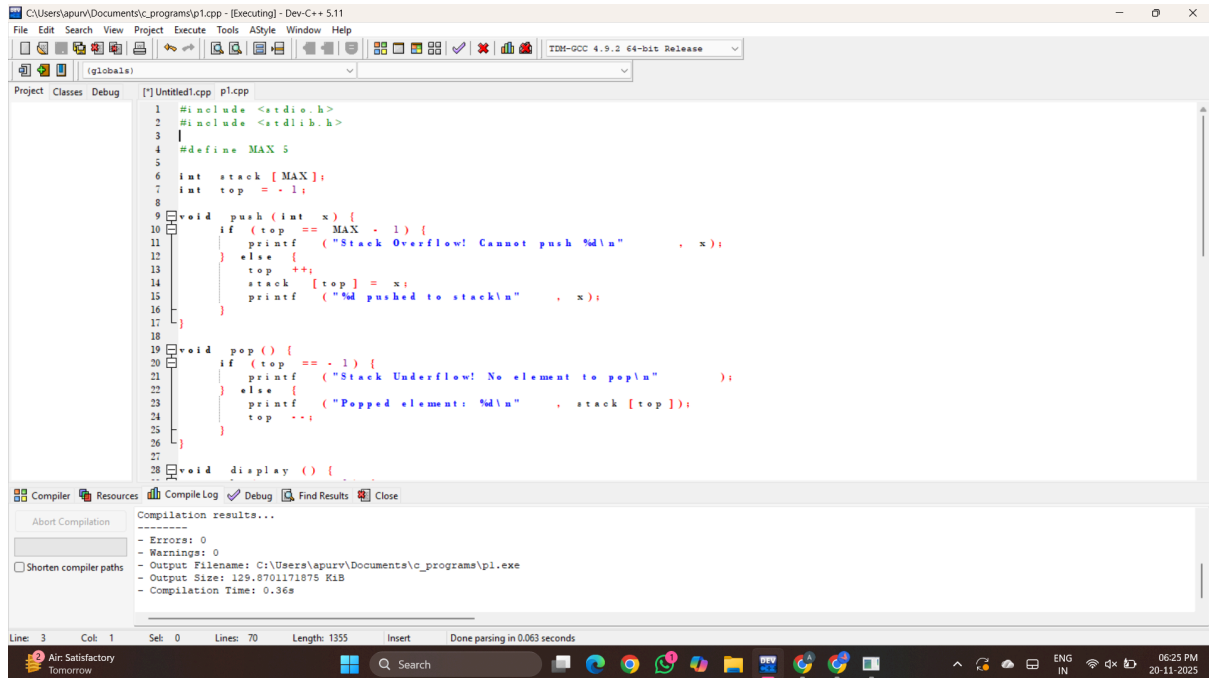


1. Write a program to simulate the working of stack using an array with the following :

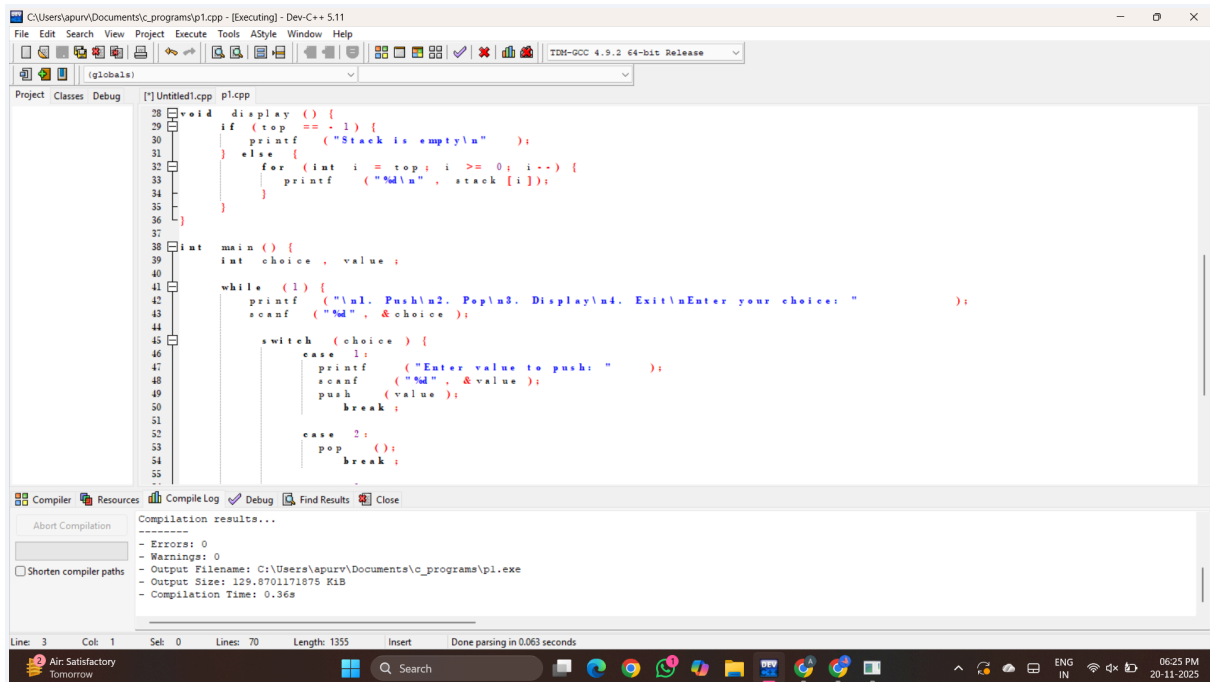
- a) Push
- b) Pop
- c) Display

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



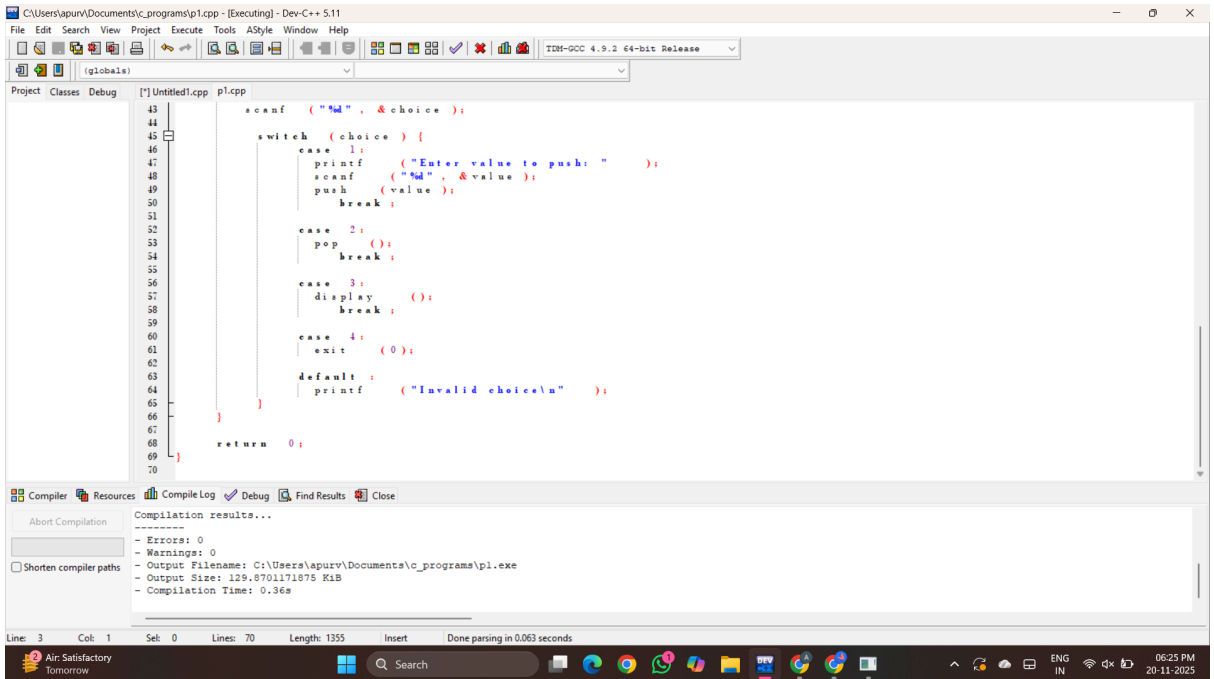
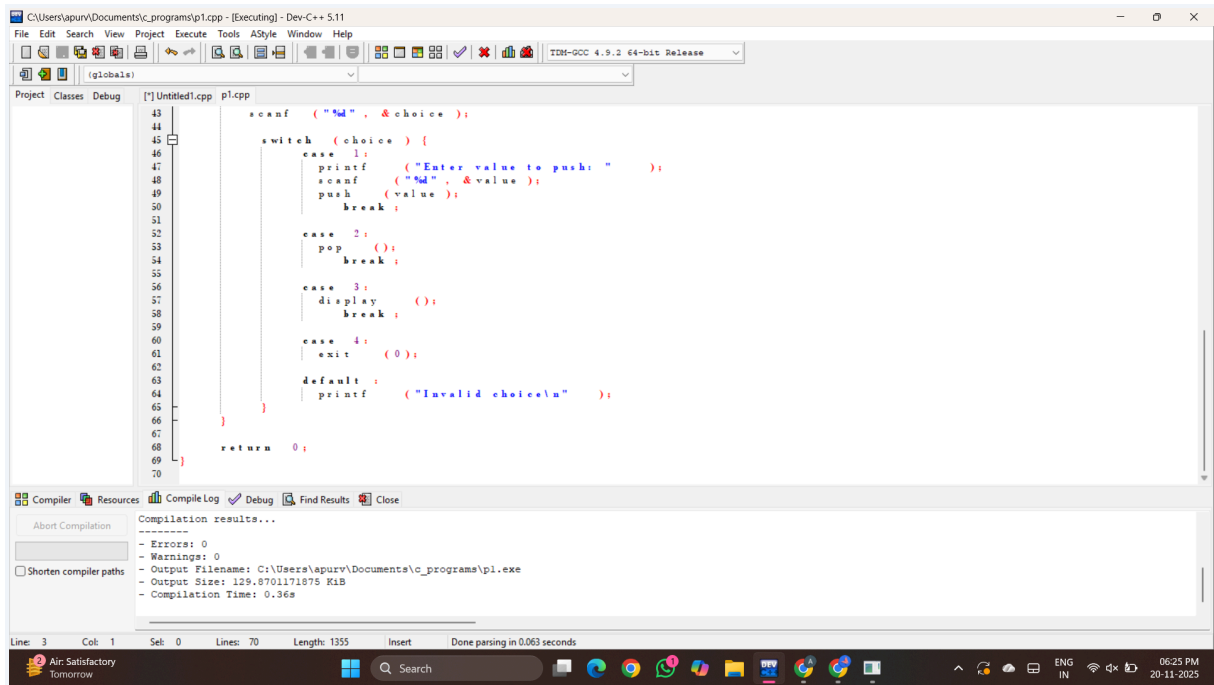
The screenshot shows the Dev-C++ IDE with a C++ program for stack simulation. The code defines a stack array of size 5 and a top pointer initialized to -1. It includes functions for push, pop, and display. The push function checks for stack overflow (top == MAX - 1) and prints an error message if it occurs, otherwise it pushes the element and increments top. The pop function checks for stack underflow (top == -1) and prints an error message if it occurs, otherwise it prints the popped element and decrements top. The display function is currently empty.

```
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 () {
```



The screenshot shows the Dev-C++ IDE with the continuation of the C++ program. It includes the display function, which checks for stack underflow and prints an error message if it occurs, otherwise it prints all elements in the stack. The main function prompts the user for a choice (1 for push, 2 for pop, 3 for display, 4 for exit) and performs the corresponding operation. The program includes a while loop to keep running until the user chooses to exit.

```
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 () {
39     int choice, value;
40
41     while (1) {
42         printf ("\n1. 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             case 2:
52                 pop ();
53                 break;
54             case 3:
55                 display ();
56                 break;
57             case 4:
58                 exit (0);
59                 break;
60             default:
61                 printf ("Invalid choice\n");
62                 break;
63         }
64     }
65 }
```



```

C:\Users\apurv\Documents\c_programs\p1.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: _

```

Air Satisfactory
Tomorrow

Search



ENG IN 06:25 PM 20-11-2025