

<https://github.com/RPChinhara/LinearSearchIn2DArray.git>

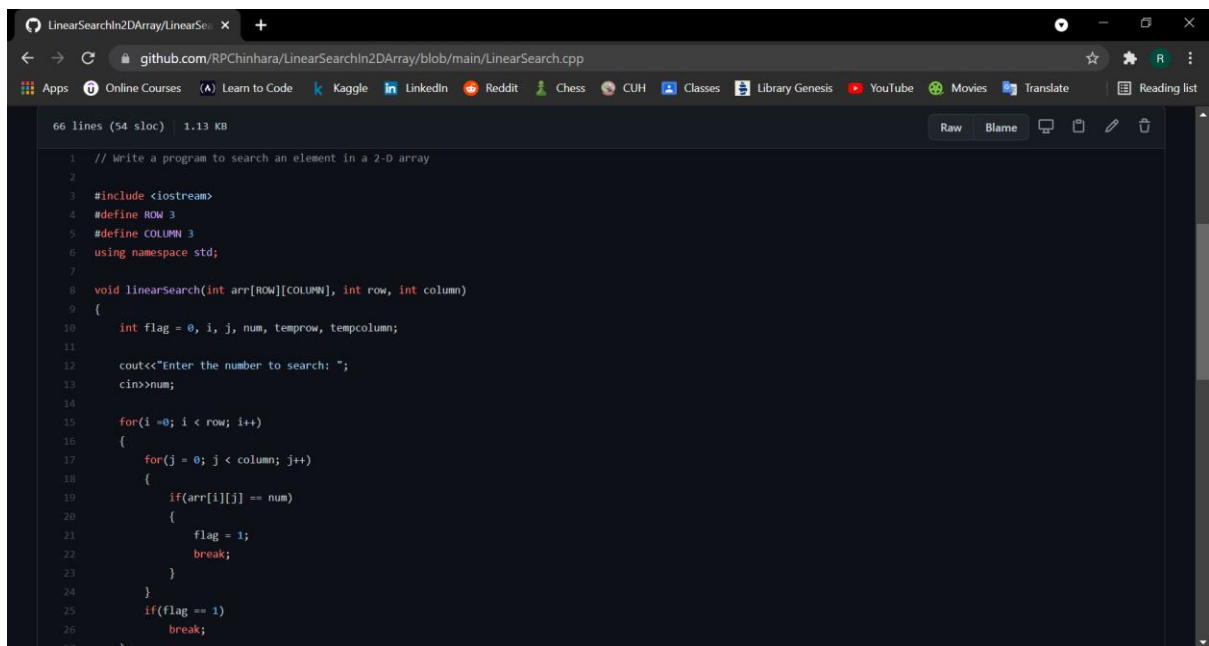
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# LINEAR SEARCH IN 2-D ARRAY

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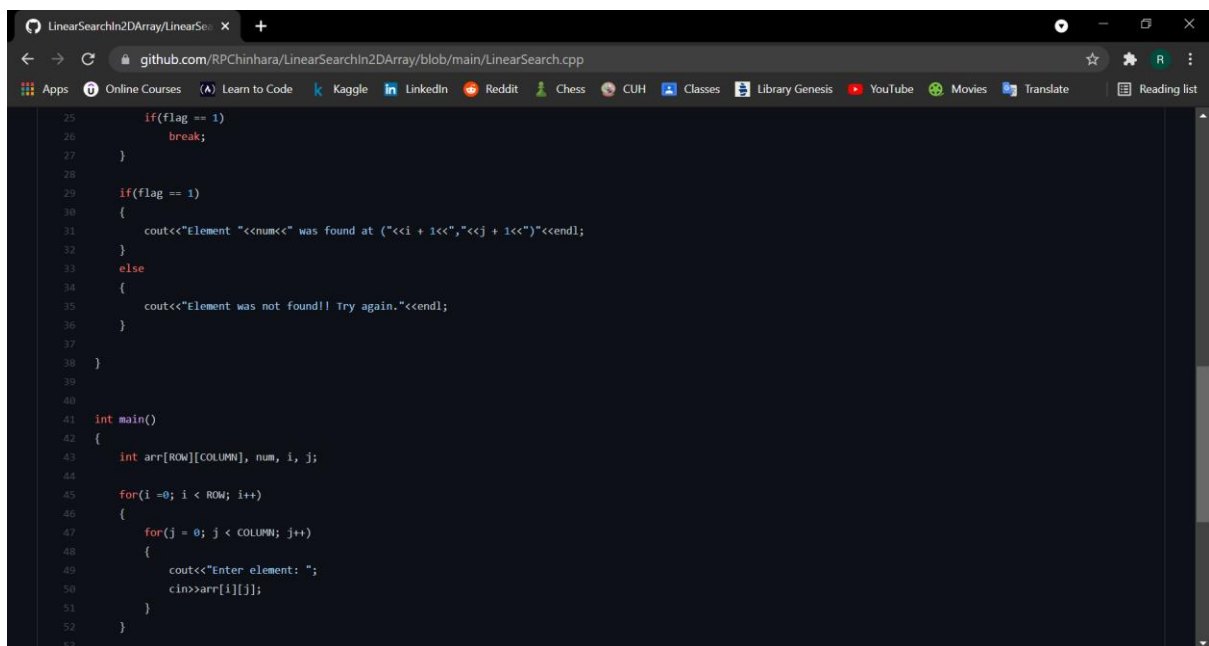
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Code:



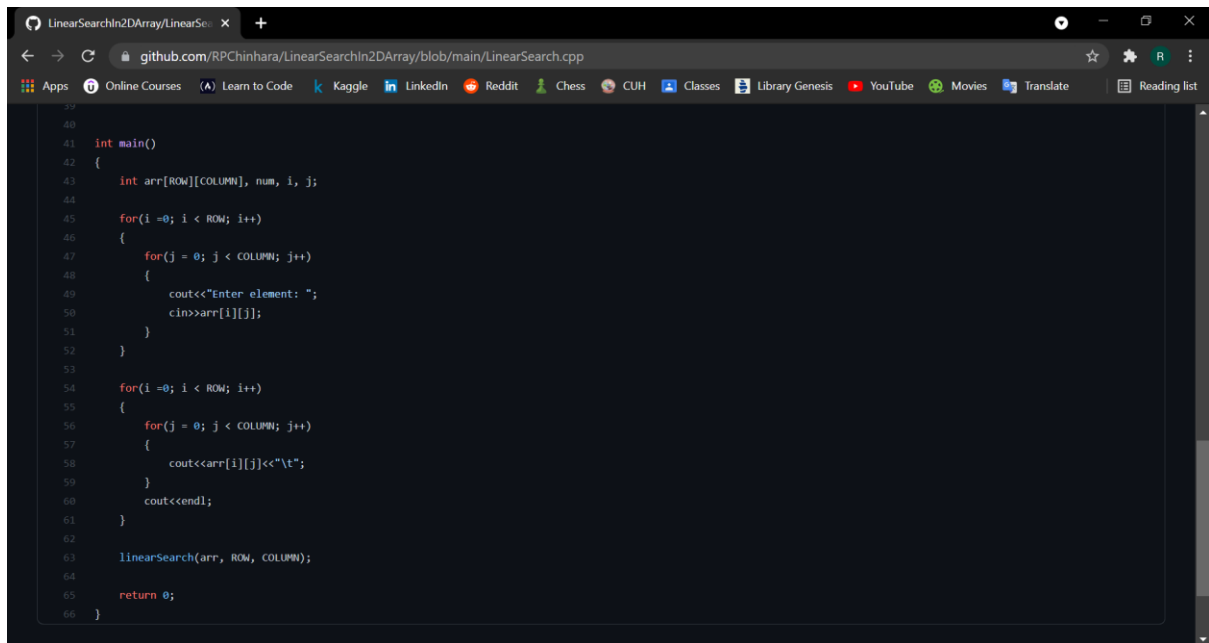
This screenshot shows the first 26 lines of a C++ program. The program is titled 'LinearSearchIn2DArray/LinearSearch.cpp' and is located in a GitHub repository. The code includes necessary headers, defines constants for ROW and COLUMN, and implements a linear search function. The function takes a 2D array, its dimensions, and a number to search for. It uses nested loops to iterate through the array and a flag to track if the element is found. The code is as follows:

```
1 // Write a program to search an element in a 2-D array
2
3 #include <iostream>
4 #define ROW 3
5 #define COLUMN 3
6 using namespace std;
7
8 void linearSearch(int arr[ROW][COLUMN], int row, int column)
9 {
10     int flag = 0, i, j, num, temprow, tempcolumn;
11
12     cout<<"Enter the number to search: ";
13     cin>>num;
14
15     for(i=0; i < row; i++)
16     {
17         for(j = 0; j < column; j++)
18         {
19             if(arr[i][j] == num)
20             {
21                 flag = 1;
22                 break;
23             }
24         }
25         if(flag == 1)
26             break;
```



This screenshot shows the continuation of the C++ program, lines 25 to 53. It completes the linear search function and implements the main function. The search function continues with the logic to print the result based on the flag. The main function initializes the array, calls the search function, and prompts the user to enter an element. The code is as follows:

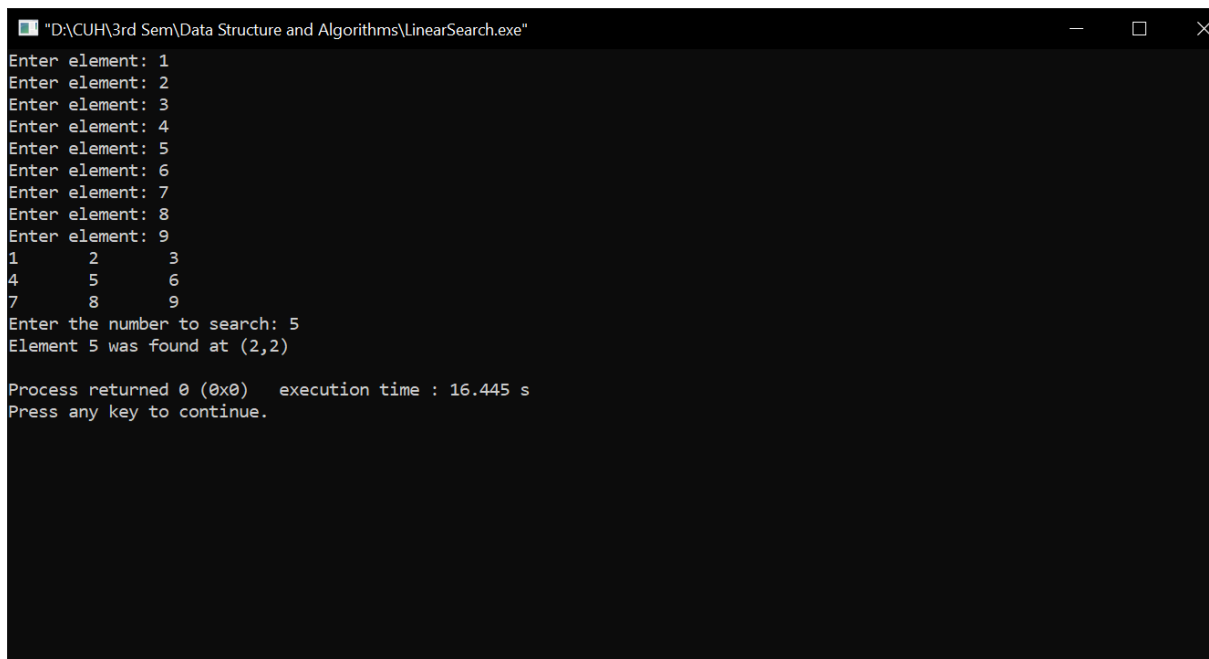
```
25         if(flag == 1)
26             break;
27     }
28
29     if(flag == 1)
30     {
31         cout<<"Element "<<num<<" was found at ("<<i + 1<<","<<j + 1<<")"<<endl;
32     }
33     else
34     {
35         cout<<"Element was not found!! Try again."<<endl;
36     }
37 }
38
39
40
41 int main()
42 {
43     int arr[ROW][COLUMN], num, i, j;
44
45     for(i=0; i < ROW; i++)
46     {
47         for(j = 0; j < COLUMN; j++)
48         {
49             cout<<"Enter element: ";
50             cin>>arr[i][j];
51         }
52     }
53 }
```



```
39
40
41 int main()
42 {
43     int arr[ROW][COLUMN], num, i, j;
44
45     for(i = 0; i < ROW; i++)
46     {
47         for(j = 0; j < COLUMN; j++)
48         {
49             cout<<"Enter element: ";
50             cin>>arr[i][j];
51         }
52     }
53
54     for(i = 0; i < ROW; i++)
55     {
56         for(j = 0; j < COLUMN; j++)
57         {
58             cout<<arr[i][j]<<"\t";
59         }
60         cout<<endl;
61     }
62
63     linearSearch(arr, ROW, COLUMN);
64
65     return 0;
66 }
```

Output:

When the element is found in the array



```
"D:\CUH\3rd Sem\Data Structure and Algorithms\LinearSearch.exe"
Enter element: 1
Enter element: 2
Enter element: 3
Enter element: 4
Enter element: 5
Enter element: 6
Enter element: 7
Enter element: 8
Enter element: 9
1      2      3
4      5      6
7      8      9
Enter the number to search: 5
Element 5 was found at (2,2)

Process returned 0 (0x0)   execution time : 16.445 s
Press any key to continue.
```