

LAB#4

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Course: Data Structure And Algorithm

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TASK#1

CASE 1:

The screenshot displays the Dev-C++ IDE interface. The main editor window shows the source code for `abdulMoiz_mansab_task1.cpp`. The code implements a linear search function and a `main` function that prompts the user for array size and elements, then searches for a target value.

```
1 #include<iostream>
2 #include<string>
3 using namespace std;
4
5 int linearSearch (string arr [],int size,string target )
6 {
7
8     for (int i=0;i<size;i++)
9     {
10         if (arr[i]==target )
11         {
12             return i;
13         }
14     }
15     return -1;
16 }
17
18 int main ()
19 {
20     string arr [10];
21     int size;
22
23     cout <<"Enter the size of Array : " ;
24     cin>>size;
25     for (int i=0;i<size;i++)
```

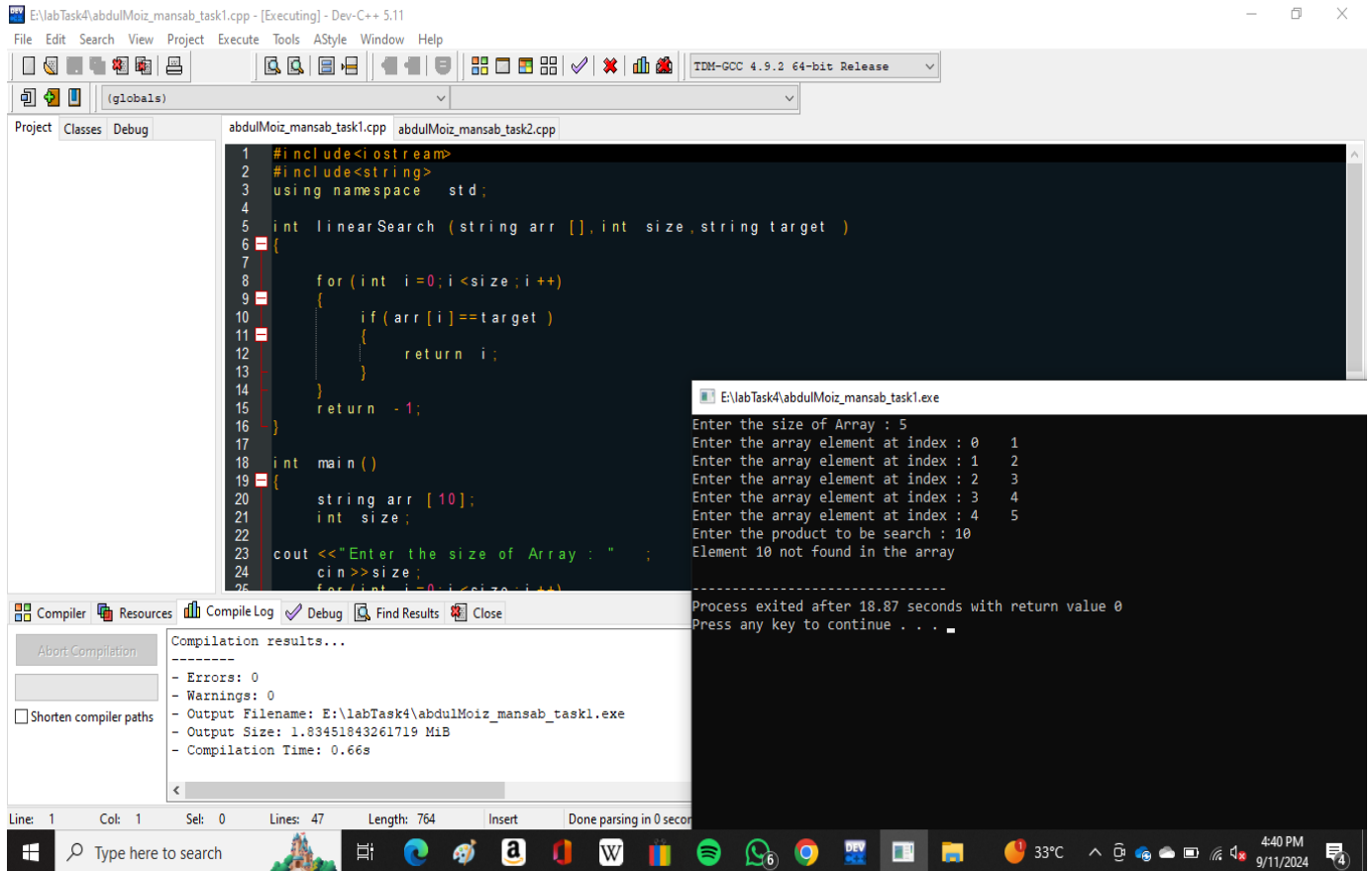
The output window shows the program's execution. It prompts the user to enter the size of the array (6) and then the elements at each index. The target value 23 is entered, and the program outputs that the element 23 was found at index 2.

```
E:\labTask4\abdulMoiz_mansab_task1.exe
Enter the size of Array : 6
Enter the array element at index : 0    34
Enter the array element at index : 1    7
Enter the array element at index : 2    23
Enter the array element at index : 3    32
Enter the array element at index : 4    5
Enter the array element at index : 5    62
Enter the product to be search : 23
Element 23 found at index 2

-----
Process exited after 42.42 seconds with return value 0
Press any key to continue . . .
```

The bottom status bar shows the current line (1), column (1), and selection (0). The bottom taskbar displays the system clock as 4:38 PM on 9/11/2024.

CASE 2:



```
1 #include<iostream>
2 #include<string>
3 using namespace std;
4
5 int linearSearch (string arr [],int size,string target )
6 {
7
8     for (int i=0;i<size;i++)
9     {
10         if (arr[i]==target )
11         {
12             return i;
13         }
14     }
15     return -1;
16 }
17
18 int main ()
19 {
20     string arr [10];
21     int size;
22
23     cout<<"Enter the size of Array : " ;
24     cin>>size;
25     for(int i=0;i<size;i++)
```

Enter the size of Array : 5
Enter the array element at index : 0 1
Enter the array element at index : 1 2
Enter the array element at index : 2 3
Enter the array element at index : 3 4
Enter the array element at index : 4 5
Enter the product to be search : 10
Element 10 not found in the array

Process exited after 18.87 seconds with return value 0
Press any key to continue . . .

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: E:\labTask4\abduMoiz_mansab_task1.exe
- Output Size: 1.03451843261719 MiB
- Compilation Time: 0.66s

Line: 1 Col: 1 Sel: 0 Lines: 47 Length: 764 Insert Done parsing in 0 seconds

TASK#2

CASE 1:

The screenshot displays a C++ IDE with the following components:

- Editor:** Contains the source code for `abdulMoiz_mansab_task2.cpp`. The code implements a binary search function and a `main` function that prompts the user for array size, elements, and a target value.
- Compiler:** Shows the compilation results, indicating 0 errors and 0 warnings. The output filename is `E:\labTask4\abdulMoiz_mansab_task2.exe`.
- Output Window:** Displays the runtime output of the program, showing the user's input and the program's response.

```
24     return -1;
25 }
26
27
28 int main()
29 {
30     int arr[10];
31     int size;
32
33     cout << "Enter the size of Array : " << endl;
34     cin >> size;
35     for (int i = 0; i < size; i++)
36     {
37         cout << "Enter the array element at index : " << i << " \t";
38         cin >> arr[i];
39     }
40
41     size = sizeof(arr) / sizeof(arr[0]);
42     int target;
43
44     cout << "Enter value to be searched : " << endl;
45     cin >> target;
46
47     int result = binarySearch(arr, size, target);
48 }
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: E:\labTask4\abdulMoiz_mansab_task2.exe
- Output Size: 1.83317565917969 MiB
- Compilation Time: 0.69s

Enter the size of Array : 7
Enter the array element at index : 0 2
Enter the array element at index : 1 5
Enter the array element at index : 2 12
Enter the array element at index : 3 23
Enter the array element at index : 4 38
Enter the array element at index : 5 45
Enter the array element at index : 6 62
Enter value to be searched : 38
Element 38 found at index 4

Process exited after 42.66 seconds with return value 0
Press any key to continue . . .

CASE 2:

The screenshot displays the Dev-C++ IDE with a C++ program for binary search. The code is in `abdulMoiz_mansab_task2.cpp` and includes a `main` function that prompts the user for array size and elements, then searches for a target value. The output window shows the program's execution with user input and the resulting array elements.

```
24     return -1;
25 }
26
27
28 int main ()
29 {
30     int arr[10];
31     int size;
32
33     cout << "Enter the size of Array : " ;
34     cin >> size;
35     for (int i=0; i<size; i++)
36     {
37         cout << "Enter the array element at index : " << i << "\t";
38         cin >> arr[i];
39     }
40
41     size = sizeof (arr) / sizeof (arr[0]);
42     int target;
43
44     cout << "Enter value to be searched : " ;
45     cin >> target;
46
47     int result = binarySearch (arr, size, target);
48 }
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: E:\labTask4\abdulMoiz_mansab_task2.exe
- Output Size: 1.83317565917969 MiB
- Compilation Time: 0.64s

Execution Output:

```
E:\labTask4\abdulMoiz_mansab_task2.exe
Enter the size of Array : 7
Enter the array element at index : 0   3
Enter the array element at index : 1   6
Enter the array element at index : 2   8
Enter the array element at index : 3  12
Enter the array element at index : 4  15
Enter the array element at index : 5  20
Enter the array element at index : 6  33
Enter value to be searched : 10
Element 10 not found in the array

-----
Process exited after 45.52 seconds with return value 0
Press any key to continue . . .
```