

# ***Compiler Construction***

CSC-323

## ***Lab Journal 1***



**Muhammad Naeem Tahir**  
**Enrolment No: 01-134202-117**  
**BSCS (5A)**

**Department of Computer Science**  
**BAHRIA UNIVERSITY, ISLAMABAD**

## **Lab # 1: Refresh C/C++ Programming**

### **Objectives:**

To learn how to implement the Simulation of Compiler modules.

### **Tools Used:**

- DevC++

**Submission Date:** Wednesday, September 28, 2022

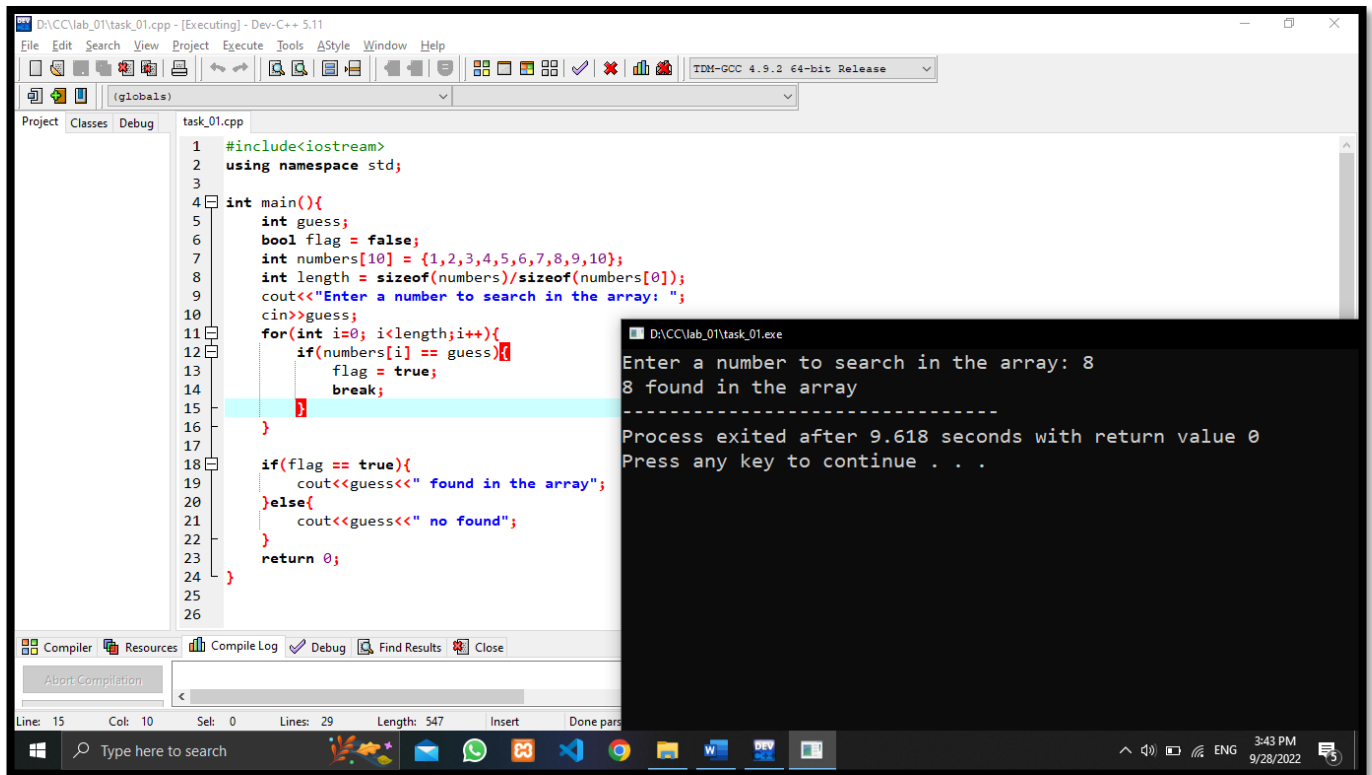
**Evaluation:**

**Signatures of Lab Engineer:**

## Task # 1:

Write a program that initializes an array. It inputs a value from the user and searches the number in the array.

### Program/Procedure:



The screenshot displays the Dev-C++ IDE with a C++ program named `task_01.cpp` and its execution output in a separate window.

**Code in `task_01.cpp`:**

```
1  #include<iostream>
2  using namespace std;
3
4  int main(){
5      int guess;
6      bool flag = false;
7      int numbers[10] = {1,2,3,4,5,6,7,8,9,10};
8      int length = sizeof(numbers)/sizeof(numbers[0]);
9      cout<<"Enter a number to search in the array: ";
10     cin>>guess;
11     for(int i=0; i<length;i++){
12         if(numbers[i] == guess){
13             flag = true;
14             break;
15         }
16     }
17
18     if(flag == true){
19         cout<<guess<<" found in the array";
20     }else{
21         cout<<guess<<" no found";
22     }
23     return 0;
24 }
25
26
```

**Execution Output:**

```
Enter a number to search in the array: 8
8 found in the array
-----
Process exited after 9.618 seconds with return value 0
Press any key to continue . . .
```

### Analysis:

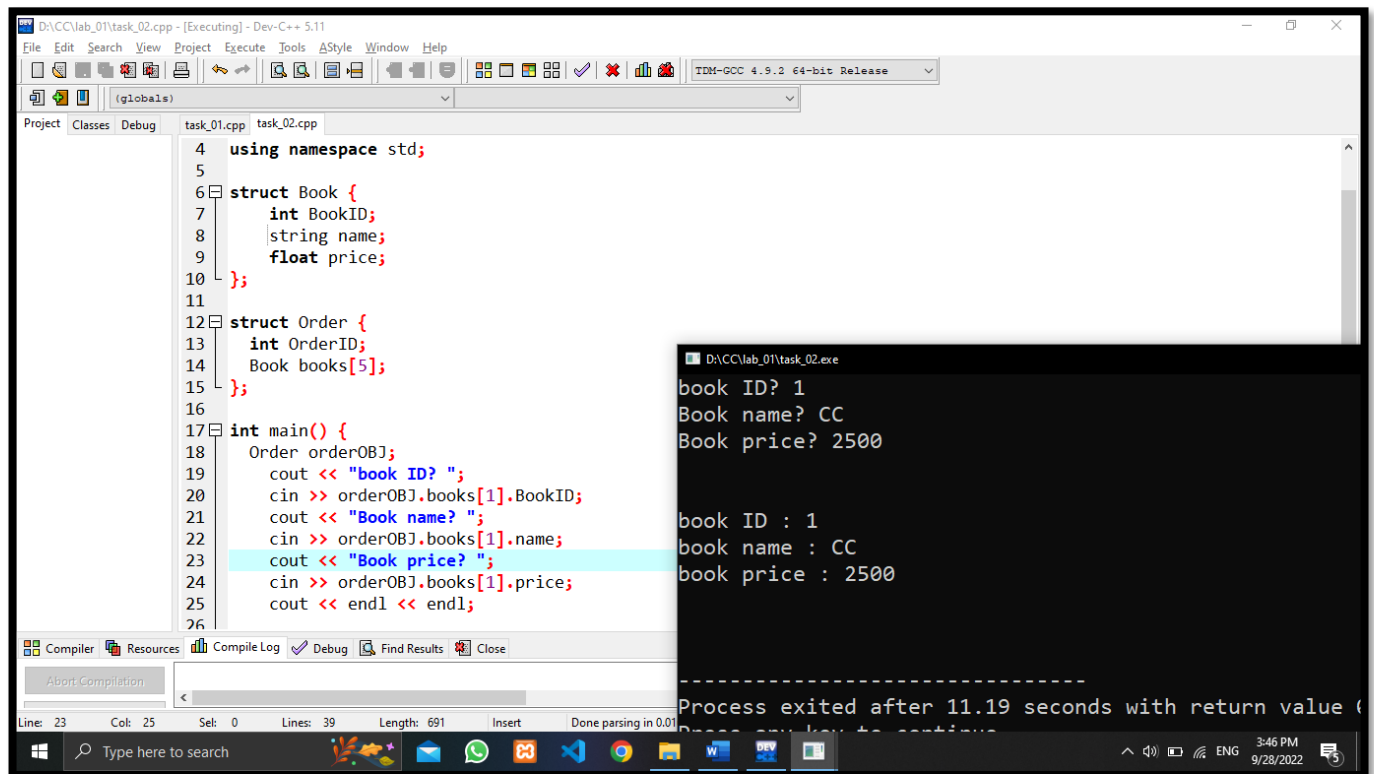
This program takes an input 'guess' from the user and search for the guess whether exists in the array

- Array initialization
- User input
- Output based on guess

## Task # 2:

Write a program that declares a structure **Book** to store **BookID**, book name and price. It declares another structure **Order** that contains **OrderID** and an array of **Book** of length 5. The program should define a variable of type **Order** and input the values from the user. The program finally displays the values.

## Program/Procedure:



The screenshot shows a C++ program in Dev-C++ with the following code:

```
4 using namespace std;
5
6 struct Book {
7     int BookID;
8     string name;
9     float price;
10 };
11
12 struct Order {
13     int OrderID;
14     Book books[5];
15 };
16
17 int main() {
18     Order orderOBJ;
19     cout << "book ID? ";
20     cin >> orderOBJ.books[1].BookID;
21     cout << "Book name? ";
22     cin >> orderOBJ.books[1].name;
23     cout << "Book price? ";
24     cin >> orderOBJ.books[1].price;
25     cout << endl << endl;
26 }
```

The execution output is as follows:

```
book ID? 1
Book name? CC
Book price? 2500

book ID : 1
book name : CC
book price : 2500

-----
Process exited after 11.19 seconds with return value 0
Press any key to continue
```

## Analysis:

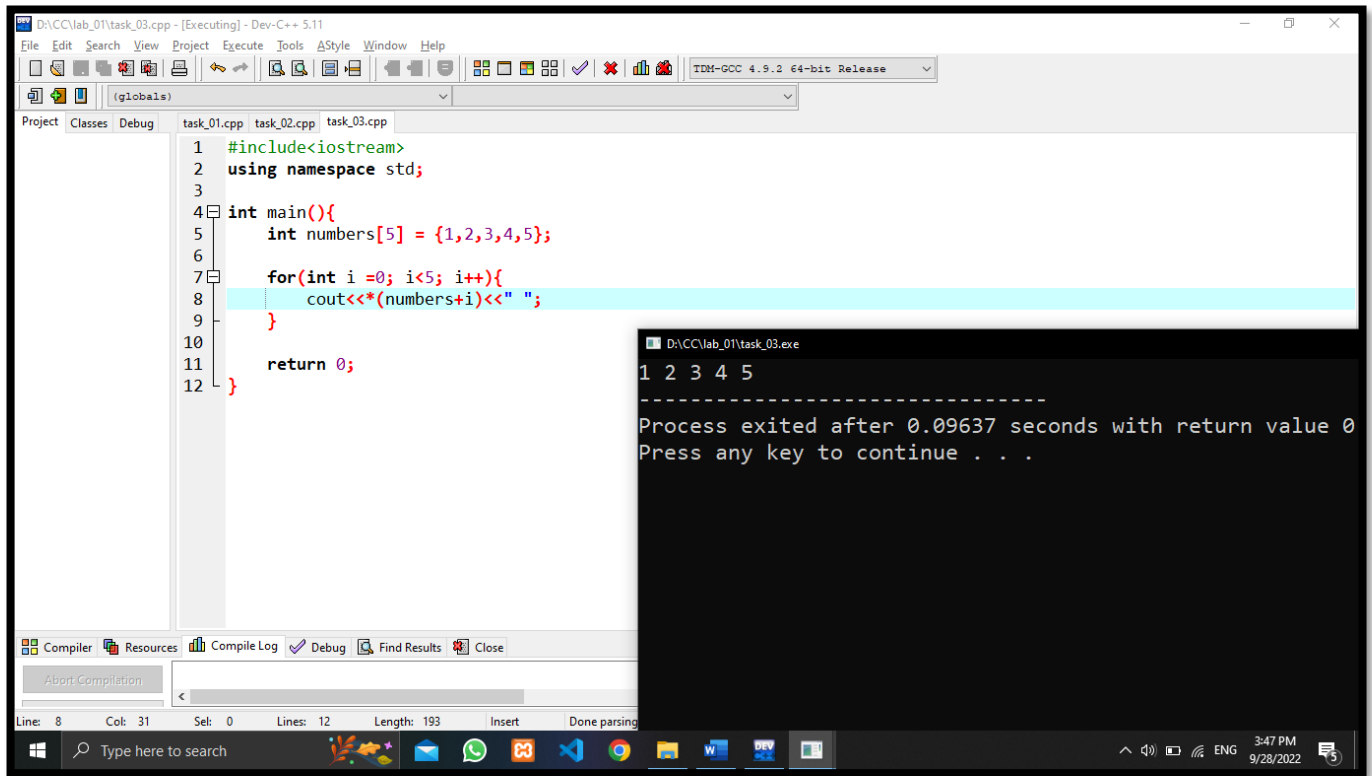
This program initializes **BookID**, names and **OrderID** using structs.

- Initialization
- User inputs the **OrderID** and name
- Output via struct object

### Task # 3:

Write a program to input five integers in an array and display them using pointers.

#### Program/Procedure:



The screenshot shows a C++ IDE with a project named 'task\_01.cpp', 'task\_02.cpp', and 'task\_03.cpp'. The code in 'task\_03.cpp' is as follows:

```
1 #include<iostream>
2 using namespace std;
3
4 int main(){
5     int numbers[5] = {1,2,3,4,5};
6
7     for(int i =0; i<5; i++){
8         cout<<*(numbers+i)<<" ";
9     }
10
11     return 0;
12 }
```

The output of the program is displayed in a separate window titled 'D:\CC\lab\_01\task\_03.exe':

```
1 2 3 4 5
-----
Process exited after 0.09637 seconds with return value 0
Press any key to continue . . .
```

#### Analysis:

This program returns and array of 5 numbers using pointers.