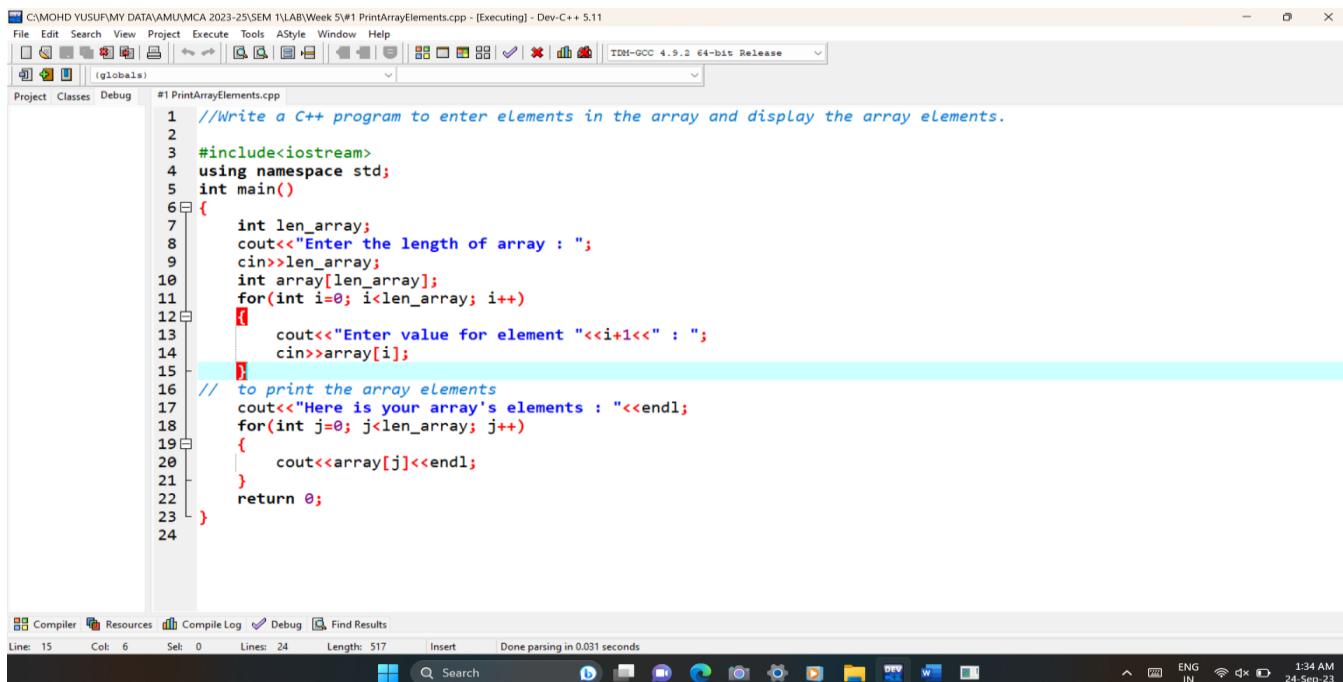


## WEEK 5

**1#** Write a C++ program to enter elements in the array and display the array elements.

**Code:**



```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#1 PrintArrayElements.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #1 PrintArrayElements.cpp
1 //Write a C++ program to enter elements in the array and display the array elements.
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int len_array;
8     cout<<"Enter the length of array : ";
9     cin>>len_array;
10    int array[len_array];
11    for(int i=0; i<len_array; i++)
12    {
13        cout<<"Enter value for element "<<i+1<<" : ";
14        cin>>array[i];
15    }
16    // to print the array elements
17    cout<<"Here is your array's elements : "<<endl;
18    for(int j=0; j<len_array; j++)
19    {
20        cout<<array[j]<<endl;
21    }
22    return 0;
23 }
24

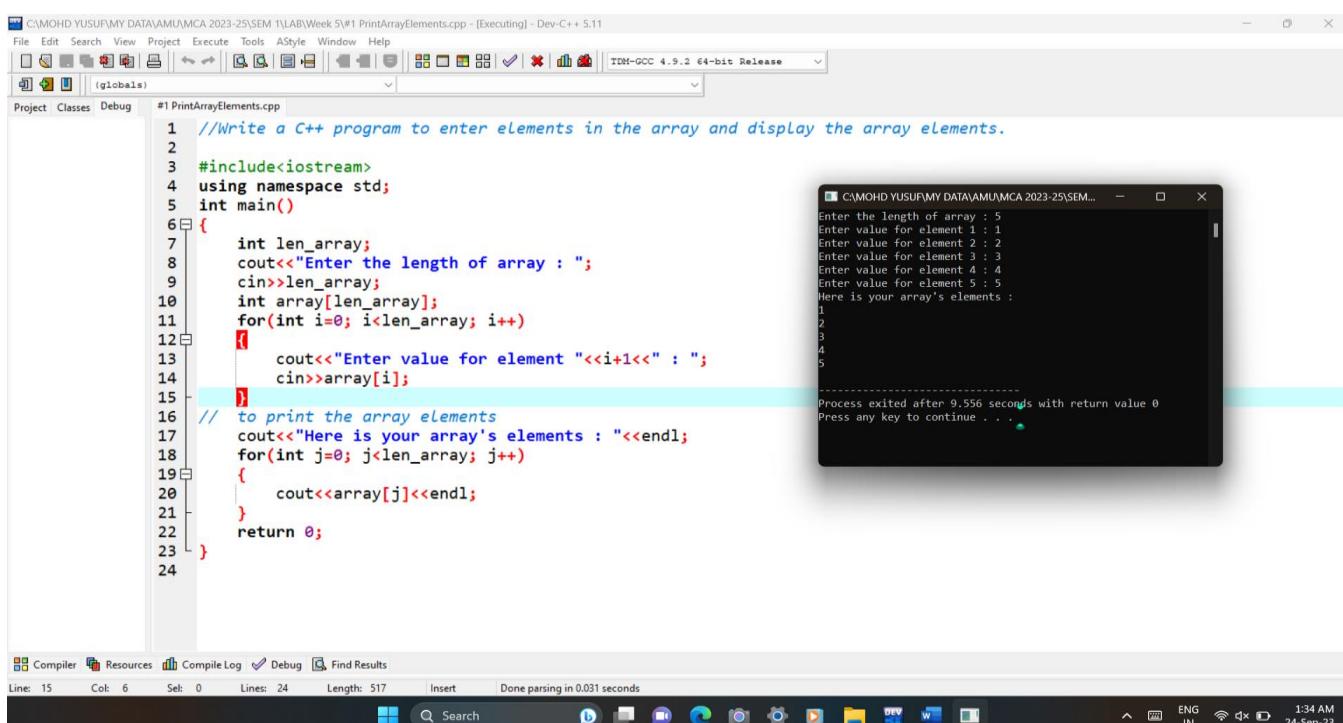
```

Compiler Resources Compile Log Debug Find Results

Line: 15 Col: 6 Sel: 0 Lines: 24 Length: 517 Insert Done parsing in 0.031 seconds

ENG IN 1:34 AM 24-Sep-23

**Output:**



```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#1 PrintArrayElements.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #1 PrintArrayElements.cpp
1 //Write a C++ program to enter elements in the array and display the array elements.
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int len_array;
8     cout<<"Enter the length of array : ";
9     cin>>len_array;
10    int array[len_array];
11    for(int i=0; i<len_array; i++)
12    {
13        cout<<"Enter value for element "<<i+1<<" : ";
14        cin>>array[i];
15    }
16    // to print the array elements
17    cout<<"Here is your array's elements : "<<endl;
18    for(int j=0; j<len_array; j++)
19    {
20        cout<<array[j]<<endl;
21    }
22    return 0;
23 }
24

```

```

Enter the length of array : 5
Enter value for element 1 : 1
Enter value for element 2 : 2
Enter value for element 3 : 3
Enter value for element 4 : 4
Enter value for element 5 : 5
Here is your array's elements :
1
2
3
4
5

```

Process exited after 9.556 seconds with return value 0  
Press any key to continue . . .

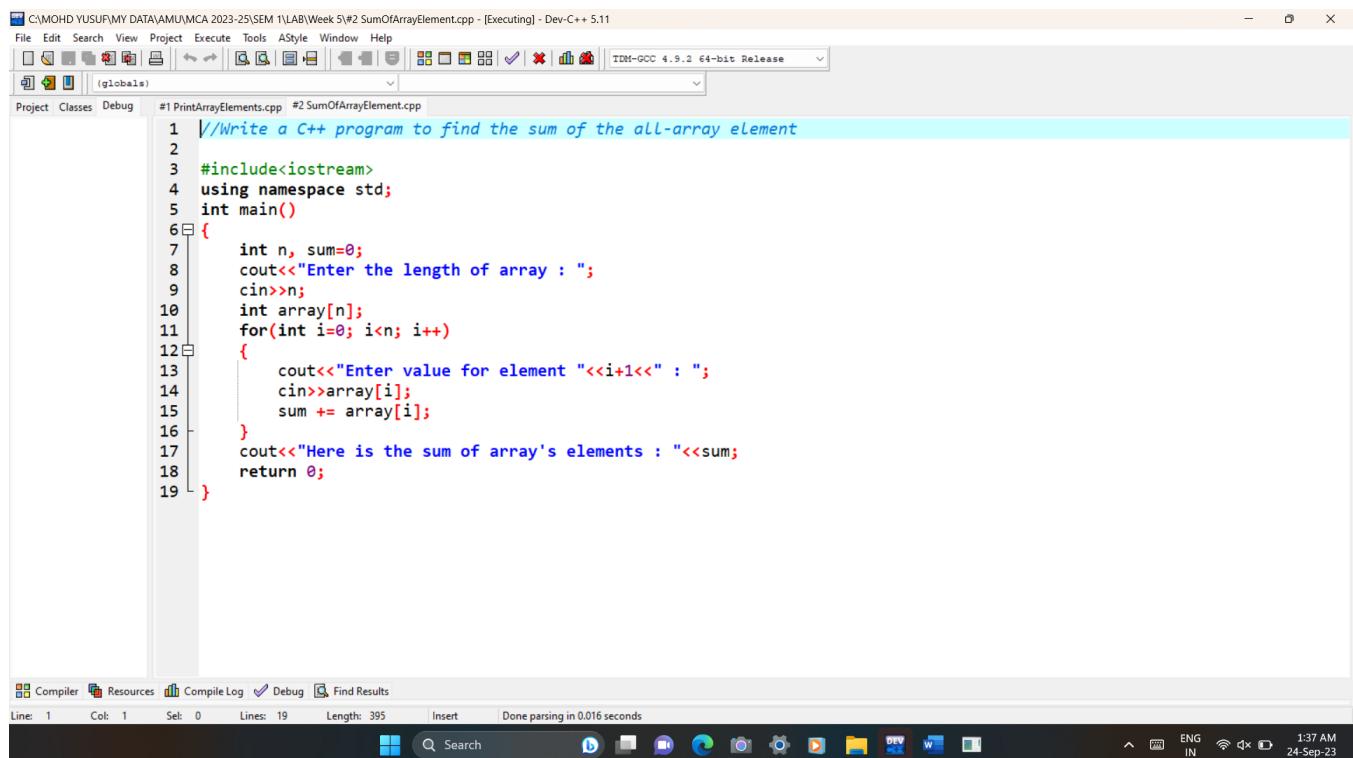
Compiler Resources Compile Log Debug Find Results

Line: 15 Col: 6 Sel: 0 Lines: 24 Length: 517 Insert Done parsing in 0.031 seconds

ENG IN 1:34 AM 24-Sep-23

**2# Write a C++ program to find the sum of the all-array element.**

**Code:**

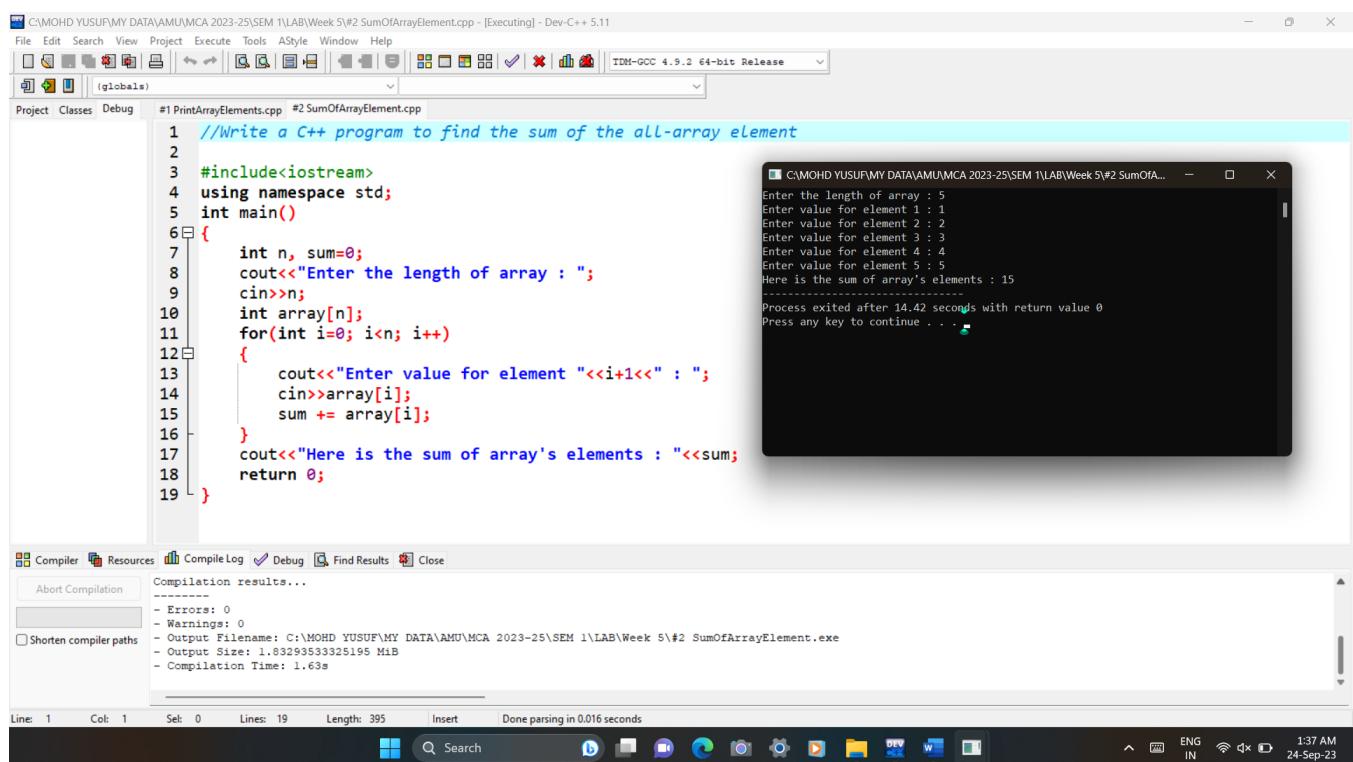


```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#2 SumOfArrayElement.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #1 PrintArrayElements.cpp #2 SumOfArrayElement.cpp
1 //Write a C++ program to find the sum of the all-array element
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int n, sum=0;
8     cout<<"Enter the length of array : ";
9     cin>>n;
10    int array[n];
11    for(int i=0; i<n; i++)
12    {
13        cout<<"Enter value for element "<<i+1<<" : ";
14        cin>>array[i];
15        sum += array[i];
16    }
17    cout<<"Here is the sum of array's elements : "<<sum;
18    return 0;
19 }

```

**Output:**



```

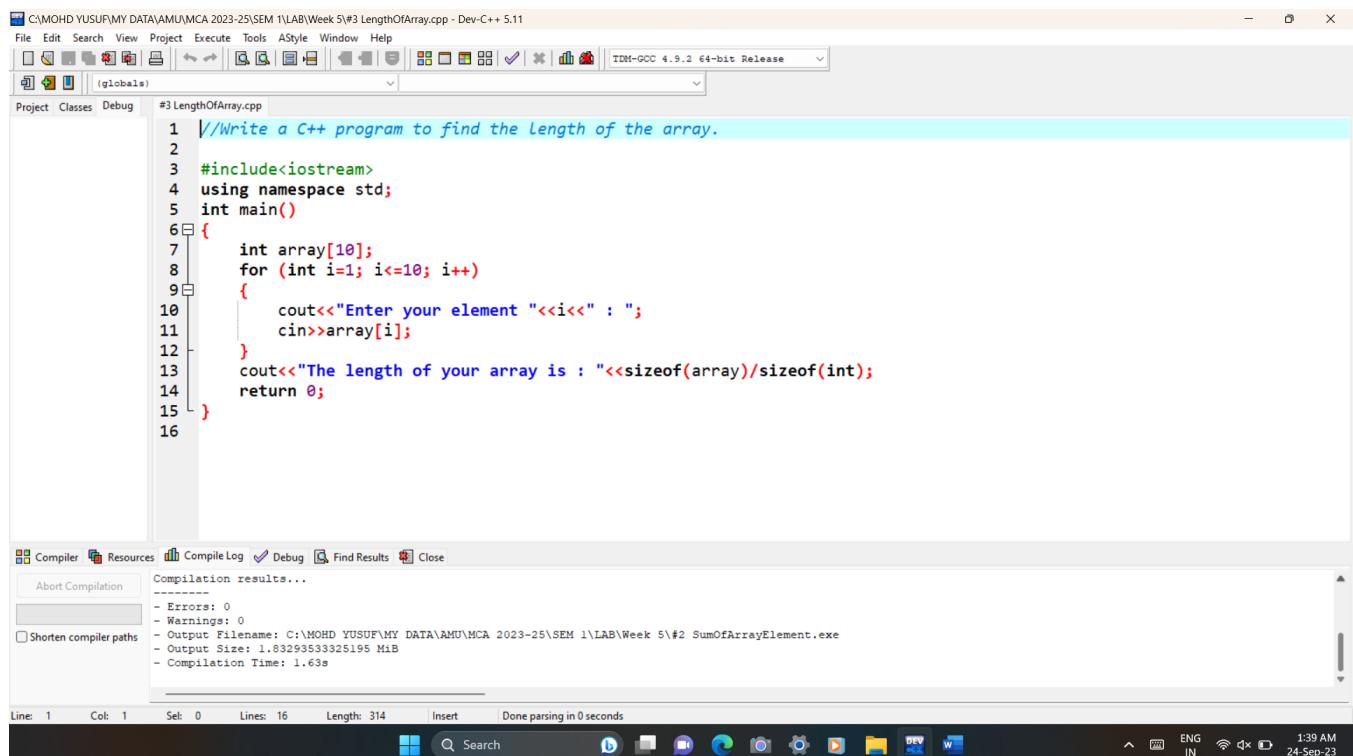
C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#2 SumOfArrayElement.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #1 PrintArrayElements.cpp #2 SumOfArrayElement.cpp
1 //Write a C++ program to find the sum of the all-array element
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int n, sum=0;
8     cout<<"Enter the length of array : ";
9     cin>>n;
10    int array[n];
11    for(int i=0; i<n; i++)
12    {
13        cout<<"Enter value for element "<<i+1<<" : ";
14        cin>>array[i];
15        sum += array[i];
16    }
17    cout<<"Here is the sum of array's elements : "<<sum;
18    return 0;
19 }

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#2 SumOfArrayElement.exe
Enter the length of array : 5
Enter value for element 1 : 1
Enter value for element 2 : 2
Enter value for element 3 : 3
Enter value for element 4 : 4
Enter value for element 5 : 5
Here is the sum of array's elements : 15
Process exited after 14.42 seconds with return value 0
Press any key to continue . . .

```

**3# Write a C++ program to find the length of the array.**

**Code:**



```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#3 LengthOfArray.cpp - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #3 LengthOfArray.cpp
1 //Write a C++ program to find the length of the array.
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int array[10];
8     for (int i=1; i<=10; i++)
9     {
10         cout<<"Enter your element "<<i<<" : ";
11         cin>>array[i];
12     }
13     cout<<"The length of your array is : "<<sizeof(array)/sizeof(int);
14     return 0;
15 }
16

```

Compiler Resources Compile Log Debug Find Results Close

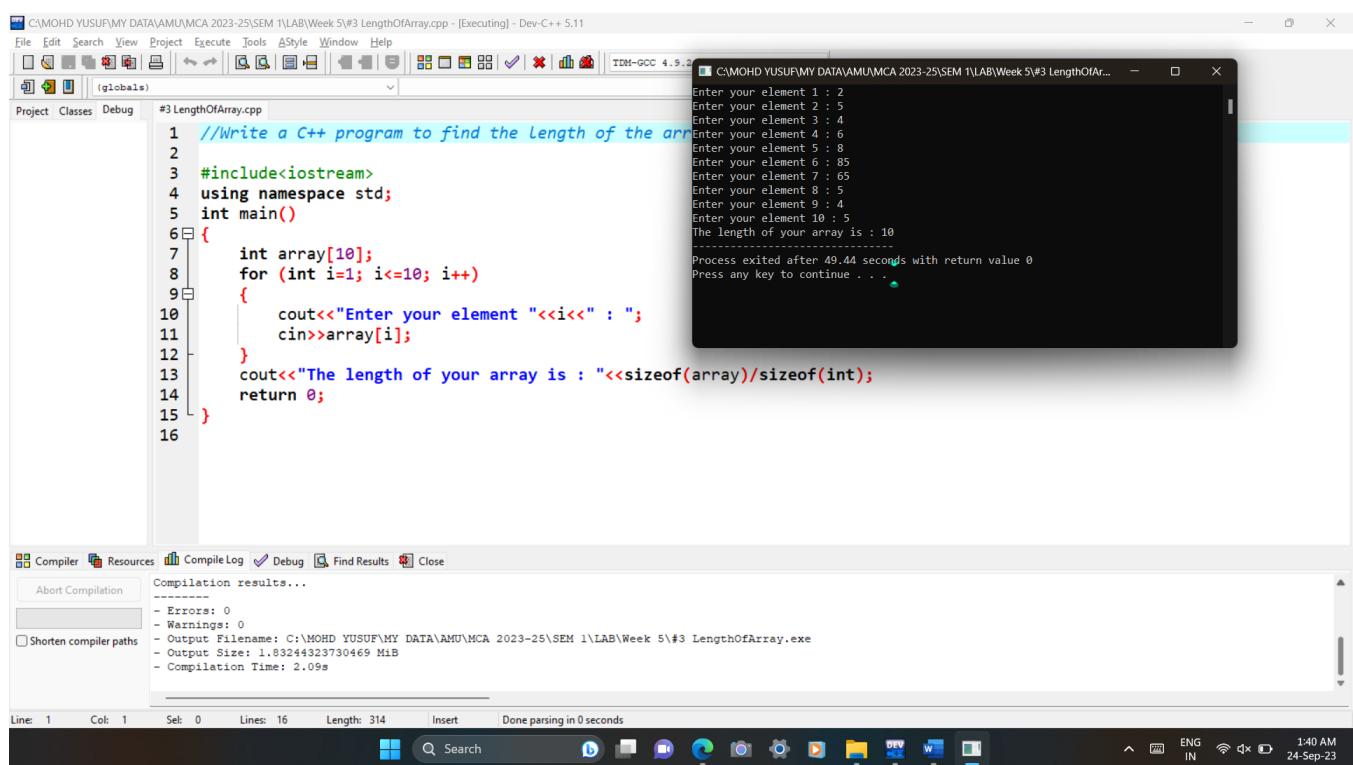
Compilation results...

-----

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#2 SumOfArrayElement.exe
- Output Size: 1.63293533325195 MiB
- Compilation Time: 1.63s

Line: 1 Col: 1 Sel: 0 Lines: 16 Length: 314 Insert Done parsing in 0 seconds

**Output:**



```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#3 LengthOfArray.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #3 LengthOfArray.cpp
1 //Write a C++ program to find the length of the arr
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int array[10];
8     for (int i=1; i<=10; i++)
9     {
10         cout<<"Enter your element "<<i<<" : ";
11         cin>>array[i];
12     }
13     cout<<"The length of your array is : "<<sizeof(array)/sizeof(int);
14     return 0;
15 }
16

```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#3 LengthOfArray.exe

Enter your element 1 : 2  
 Enter your element 2 : 5  
 Enter your element 3 : 4  
 Enter your element 4 : 6  
 Enter your element 5 : 8  
 Enter your element 6 : 85  
 Enter your element 7 : 65  
 Enter your element 8 : 5  
 Enter your element 9 : 4  
 Enter your element 10 : 5  
 The length of your array is : 10  
 -----  
 Process exited after 49.44 seconds with return value 0  
 Press any key to continue . . .

Compiler Resources Compile Log Debug Find Results Close

Compilation results...

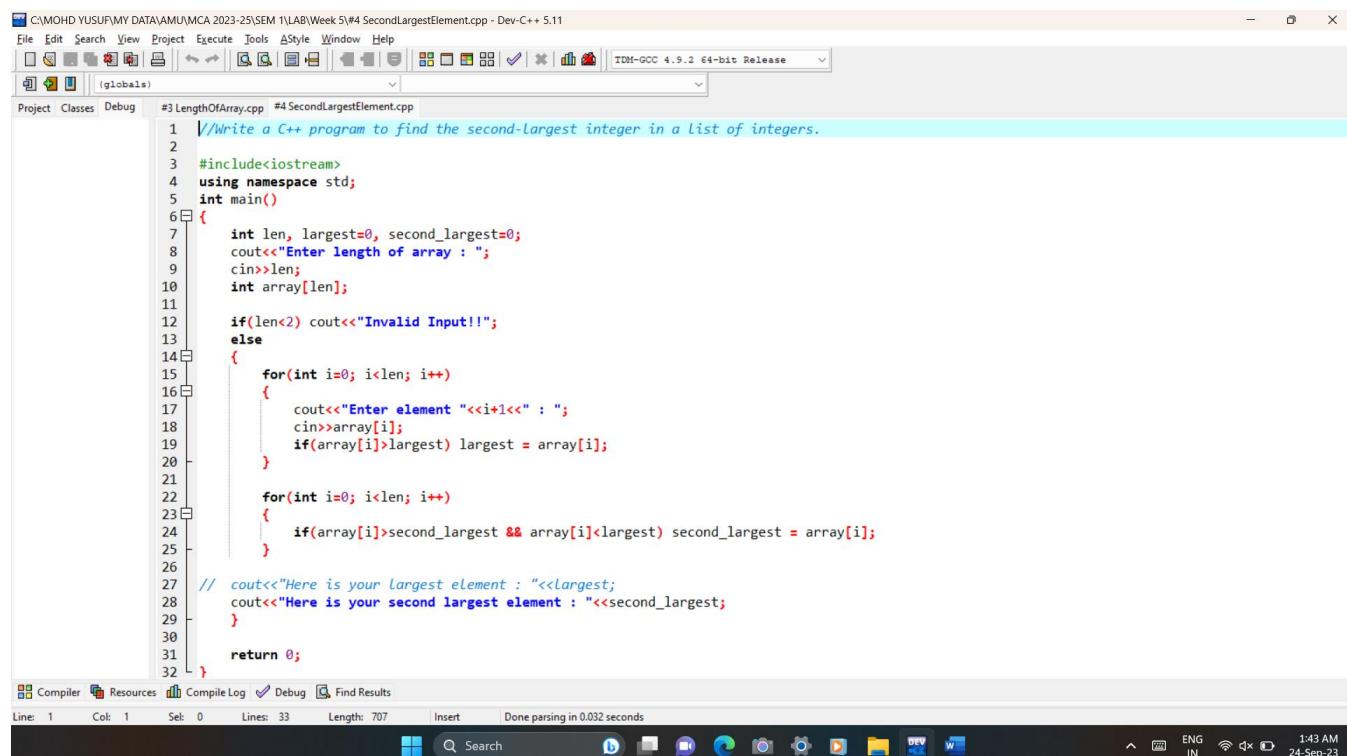
-----

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#3 LengthOfArray.exe
- Output Size: 1.63244323730469 MiB
- Compilation Time: 2.09s

Line: 1 Col: 1 Sel: 0 Lines: 16 Length: 314 Insert Done parsing in 0 seconds

**4# Write a C++ program to find the second-largest integer in a list of integers.**

**Code:**



```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#4 SecondLargestElement.cpp - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #3 LengthOfArray.cpp #4 SecondLargestElement.cpp
1 //Write a C++ program to find the second-Largest integer in a list of integers.
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int len, largest=0, second_largest=0;
8     cout<<"Enter length of array : ";
9     cin>>len;
10    int array[len];
11
12    if(len<2) cout<<"Invalid Input!";
13    else
14    {
15        for(int i=0; i<len; i++)
16        {
17            cout<<"Enter element "<<i+1<<" : ";
18            cin>>array[i];
19            if(array[i]>largest) largest = array[i];
20        }
21
22        for(int i=0; i<len; i++)
23        {
24            if(array[i]>second_largest && array[i]<largest) second_largest = array[i];
25        }
26
27 // cout<<"Here is your largest element : "<<largest;
28 // cout<<"Here is your second largest element : "<<second_largest;
29
30
31    return 0;
32 }

```

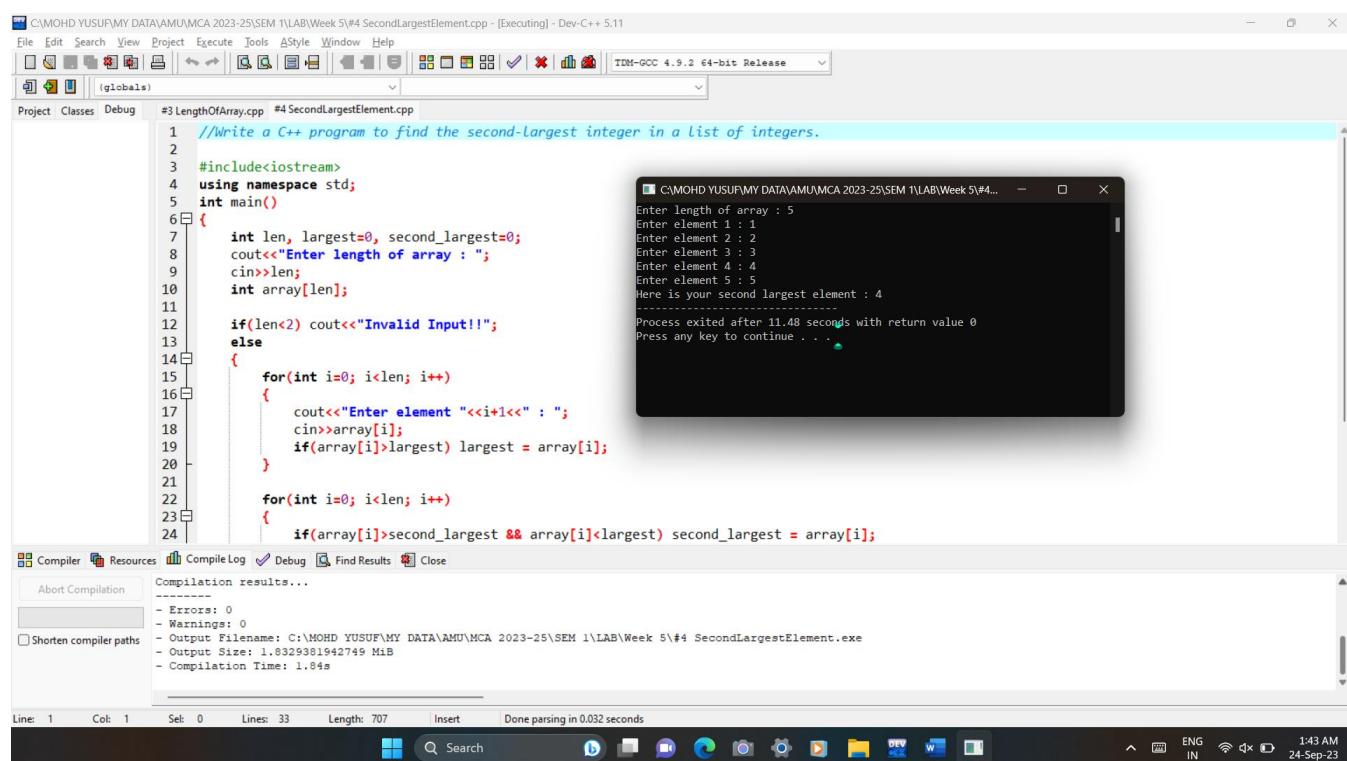
Compiler Resources Compile Log Debug Find Results

Line: 1 Col: 1 Sel: 0 Lines: 33 Length: 707 Insert Done parsing in 0.032 seconds

File Edit Search View Project Execute Tools AStyle Window Help

1:43 AM 24-Sep-23

**Output:**



```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#4 SecondLargestElement.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #3 LengthOfArray.cpp #4 SecondLargestElement.cpp
1 //Write a C++ program to find the second-Largest integer in a list of integers.
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int len, largest=0, second_largest=0;
8     cout<<"Enter length of array : ";
9     cin>>len;
10    int array[len];
11
12    if(len<2) cout<<"Invalid Input!";
13    else
14    {
15        for(int i=0; i<len; i++)
16        {
17            cout<<"Enter element "<<i+1<<" : ";
18            cin>>array[i];
19            if(array[i]>largest) largest = array[i];
20        }
21
22        for(int i=0; i<len; i++)
23        {
24            if(array[i]>second_largest && array[i]<largest) second_largest = array[i];
25        }
26
27 // cout<<"Here is your largest element : "<<largest;
28 // cout<<"Here is your second largest element : "<<second_largest;
29
30
31    return 0;
32 }

```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#4...

Enter length of array : 5  
Enter element 1 : 1  
Enter element 2 : 2  
Enter element 3 : 3  
Enter element 4 : 4  
Enter element 5 : 5  
Here is your second largest element : 4  
Process exited after 11.48 seconds with return value 0  
Press any key to continue . . .

Compiler Resources Compile Log Debug Find Results Close

Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#4 SecondLargestElement.exe
- Output Size: 1.8329381942749 MiB
- Compilation Time: 1.84s

Line: 1 Col: 1 Sel: 0 Lines: 33 Length: 707 Insert Done parsing in 0.032 seconds

File Edit Search View Project Execute Tools AStyle Window Help

1:43 AM 24-Sep-23

**5# Write a C++ Program to reverse the position of the array element (Hint: First eminent to the last element.)**

**Code:**

```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#5 ReverseTheArrayElements.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #3 LengthOfArray.cpp #4 SecondLargestElement.cpp [*] #5 ReverseTheArrayElements.cpp
5 int main()
6 {
7     int len;
8
9     cout<<"Enter the length of array : ";
10    cin>>len;
11
12    int array[len];
13    //Loop for taking elements from user:
14    for(int i=0; i<len; i++)
15    {
16        cout<<"Enter array's element "<<i+1<<" : ";
17        cin>>array[i];
18    }
19    int array1[len];
20    //Steps to reverse the array:
21
22    for(int k=0; k<len; k++)
23    {
24        array1[k]=array[len-k-1];
25    }
26
27    //Loop for print elements:
28
29    cout<<"Here is your reverse array : "<<endl;
30
31    for(int j=0; j<len; j++)
32    {
33        cout<<j+1<<" element is : "<<array1[j]<<endl;
34    }
35
36
return 0;

```

Compiler Resources Compile Log Debug Find Results

Line: 12 Col: 20 Sel: 0 Lines: 38 Length: 637 Insert Done parsing in 0.016 seconds

Windows Taskbar: Search, Start, File Explorer, Task View, Taskbar Buttons, Language Bar (ENG IN), Date/Time (24-Sep-23)

**Output:**

```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#5 ReverseTheArrayElements.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #5 ReverseTheArrayElements.cpp
1 //Program to Reverse the array's elements:
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int len;
8
9     cout<<"Enter the length of array : ";
10    cin>>len;
11
12    int array[len];
13
14    //Loop for taking elements from user:
15
16    for(int i=0; i<len; i++)
17    {
18        cout<<"Enter array's element "<<i+1<<" : ";
19        cin>>array[i];
20    }
21    int array1[len];
22
23    //Steps to reverse the array:
24

```

```

Enter the length of array :
Enter array's element 1 : 1
Enter array's element 2 : 2
Enter array's element 3 : 3
Enter array's element 4 : 4
Enter array's element 5 : 5
Here is your reverse array :
1 element is : 5
2 element is : 4
3 element is : 3
4 element is : 2
5 element is : 1

```

-----

Process exited after 17.13 seconds with return value 0  
Press any key to continue . . .

Compiler Resources Compile Log Debug Find Results Close

Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#5 ReverseTheArrayElements.exe
- Output Size: 1.03312702178955 MiB
- Compilation Time: 1.66s

Line: 1 Col: 1 Sel: 0 Lines: 41 Length: 646 Insert Done parsing in 0.671 seconds

Windows Taskbar: Search, Start, File Explorer, Task View, Taskbar Buttons, Language Bar (ENG IN), Date/Time (24-Sep-23)

**6.1#** Write a C++ program to perform the following:

### a. Addition of two matrices

code:

The screenshot shows the Dev-C++ IDE interface with the following details:

- Title Bar:** C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#6.1 AdditionOfTwoArray.cpp - Dev-C++ 5.11
- Toolbar:** File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, Help.
- Project Explorer:** Shows 'globals' under the Project tab.
- Code Editor:** Displays the C++ code for '6.1 AdditionOfTwoArray.cpp'. The code is a program to add two matrices. It includes comments explaining the steps, declares variables for rows and columns, and uses nested loops to input elements from the user. The code is written in blue and black text, with syntax highlighting.

```
1 //Program for Addition of two matrices:  
2  
3 #include<iostream>  
4 using namespace std;  
5 int main()  
6 {  
7     int rows, columns;  
8  
9     cout<<"For Addition of two matrices the order or dimension of the matrices must be same."<<endl;  
10    cout<<"Enter the rows of matrices: ";  
11    cin>>rows;  
12    cout<<"Enter the columns of matrices: ";  
13    cin>>columns;  
14  
15    int mat1[rows][columns], mat2[rows][columns], sum_mat[rows][columns];  
16  
17    //taking elements for matrix1:  
18  
19    cout<<"Enter Elements of First Matrix: "<<endl;  
20    for(int i=0; i<rows; i++)  
21    {  
22        for(int j=0; j<columns; j++)  
23        {  
24            cout<<"Enter value for element ("<<i+1<<","<<j+1<<"): ";  
25            cin>>mat1[i][j];  
26        }  
27    }  
28  
29    //taking elements for matrix2:  
30  
31    cout<<"Enter Elements of Second Matrix: "<<endl;
```

Line: 1 Col: 1 Sel: 0 Lines: 60 Length: 1449 Insert Done parsing in 0.579 seconds

The screenshot shows the Dev-C++ IDE interface with the following details:

- Title Bar:** CMOHD YUSUFUY DATA AVAMU/MCA 2023-25SEM \LAB\Week 5\#6.1 AdditionOfTwoArray.cpp - Dev-C++ 5.11
- Toolbar:** Standard file operations (File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, Help) and build options (Build, Run, Stop, Clean, Rebuild, Minimize, Maximize, Close).
- Project Explorer:** Shows the project structure with "globals" selected.
- Code Editor:** Displays the C++ source code for "AdditionOfTwoArray.cpp". The code defines a function to add two matrices and prints the result.

```
#include <iostream>
using namespace std;

int main()
{
    int rows, columns;
    cout << "Enter Number of Rows: ";
    cin >> rows;
    cout << "Enter Number of Columns: ";
    cin >> columns;

    int mat1[rows][columns], mat2[rows][columns], sum_mat[rows][columns];
    cout << "Enter Elements of First Matrix: " << endl;
    for(int i=0; i<rows; i++)
    {
        for(int j=0; j<columns; j++)
        {
            cout << "Enter value for element (" << i << ", " << j << "): ";
            cin >> mat1[i][j];
        }
    }

    cout << "\nAdding the Two Given Matrix...\n";
    for(int i=0; i<rows; i++)
    {
        for(int j=0; j<columns; j++) sum_mat[i][j] = mat1[i][j]+mat2[i][j];
    }

    //Loop for printing the array:
    cout << "Addition Result of Two Given Matrix is:\n";
    for(int i=0; i<rows; i++)
    {
        for(int j=0; j<columns; j++)
        {
            cout << sum_mat[i][j] << " ";
        }
        cout << endl;
    }

    return 0;
}
```

## Output:

The screenshot shows the Dev-C++ IDE interface. On the left, the code for 'AdditionOfTwoArray.cpp' is displayed, which includes comments for matrix addition and user input for dimensions and elements. On the right, the terminal window shows the execution of the program, prompting for matrix dimensions and elements, and then displaying the resulting matrix.

```

//Program for Addition of two matrices:
#include<iostream>
using namespace std;
int main()
{
    int rows, columns;
    cout<<"For Addition of two matrices the order or dimension of the matrices must be same."<<endl;
    cout<<"Enter the rows of matrices: ";
    cin>>rows;
    cout<<"Enter the columns of matrices: ";
    cin>>columns;
    int mat1[rows][columns], mat2[rows][columns], sum_mat[rows][columns];
    //taking elements for matrix1:
    cout<<"Enter Elements of First Matrix: "<<endl;
    for(int i=0; i<rows; i++)
    {
        for(int j=0; j<columns; j++)
        {
            cout<<"Enter value for element ("<<i+1<<","<<j+1<<"): ";
        }
    }
}

```

```

must be same.
Enter the rows of matrices: 3
Enter the columns of matrices: 3
Enter Elements of First Matrix:
Enter value for element (1,1): 1
Enter value for element (1,2): 2
Enter value for element (1,3): 3
Enter value for element (2,1): 4
Enter value for element (2,2): 5
Enter value for element (2,3): 6
Enter Elements of Second Matrix:
Enter value for element (1,1): 1
Enter value for element (1,2): 2
Enter value for element (1,3): 3
Enter value for element (2,1): 4
Enter value for element (2,2): 5
Enter value for element (2,3): 6
Adding the Two Given Matrix...
Addition Result of Two Given Matrix is:
2 4 6
8 10 12
Process exited after 30.95 seconds with return value 0
Press any key to continue . . .

```

**6.2#** Write a C++ program to perform the following:

b. Multiplication of two matrices

code:

The screenshot shows the Dev-C++ IDE interface. On the left, the code for 'MultiplicationOfTwoMatrices.cpp' is displayed, which includes comments for dot multiplication and user input for dimensions and elements. On the right, the terminal window shows the execution of the program, prompting for matrix dimensions and elements, and then displaying the resulting matrix.

```

//Program for multiplication of two matrices:
#include<iostream>
using namespace std;
int main()
{
    cout<<endl<<"In dot multiplication of matrices, number of columns of matrix1 must be equal to number of rows of matrix2."<<endl;
    int rows,columns,columns2;
    cout<<"Enter number of rows of matrix1 : ";
    cin>>rows;
    cout<<"Enter number of columns of matrix1 or you can say that number of rows of matrix2 : ";
    cin>>columns;
    cout<<"Enter the columns of matrix2 : ";
    cin>>columns2;
    int mat1[rows][columns], mat2[columns][columns2], mul_mat[rows][columns2];
    int sum;
    //Taking the values of elements of matrix1 from user:
    cout<<endl<<"Enter elements for matrix1 : "<<endl;
    for(int i=0; i<rows; i++)
    {
        for(int j=0; j<columns; j++)
        {
            cout<<"Enter value for element ("<<i+1<<","<<j+1<<"): ";
            cin>>mat1[i][j];
        }
    }
}

```

The screenshot shows the Dev-C++ IDE interface. The title bar indicates the file is executing. The menu bar includes File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, Help. The toolbar has icons for file operations like Open, Save, Print, and Build. The status bar at the bottom shows Line: 1, Col: 1, Sel: 0, Lines: 79, Length: 2038, Insert, Done parsing in 0.015 seconds, and a date/time stamp of 24-Sep-23.

```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#6.2 MultiplicationOfTwoMatrices.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #6.1 AdditionOfTwoArray.cpp #6.2 MultiplicationOfTwoMatrices.cpp
43     |cin>>mat2[i][j];
44 }
45
46
47 // Multiplying two matrices...
48 for(int i=0; i<rows; i++)
49 {
    //these i and j Loop for assign value of mul_mat;
    for(int j=0; j<columns2; j++)
    {
        sum=0;
        //this Loop is for multiplication;
        for(int k=0; k<columns; k++)
        {
            sum += mat1[i][k] * mat2[k][j];
        }
        mul_mat[i][j] = sum;
    }
}
45
46
47 //Loop for printing the required matrix:
48 cout<<"\nMultiplication Result:\n";
49 for(int i=0; i<rows; i++)
{
    for(int j=0; j<columns2; j++)
    {
        cout<<mul_mat[i][j]<<"\t";
    }
    cout<<endl;
}

```

**Output:**

The screenshot shows the Dev-C++ IDE interface with the output window open. The title bar indicates the file is executing. The menu bar includes File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, Help. The toolbar has icons for file operations like Open, Save, Print, and Build. The status bar at the bottom shows Line: 1, Col: 1, Sel: 0, Lines: 79, Length: 2038, Insert, Done parsing in 0.015 seconds, and a date/time stamp of 24-Sep-23.

The output window displays the following interaction:

```

In dot multiplication of matrices, number of columns of matrix1 must be equal to number of rows of matrix2.
Enter number of rows of matrix1 : 1
Enter number of columns of matrix1 or you can say that number of rows of matrix2 : 2
Enter the columns of matrix2 : 3

Enter elements for matrix1 :
Enter value for element (1,1): 1
Enter value for element (1,2): 2

Enter elements for matrix2 :
Enter value for element (1,1): 1
Enter value for element (1,2): 2
Enter value for element (1,3): 3
Enter value for element (2,1): 4
Enter value for element (2,2): 5
Enter value for element (2,3): 6

Multiplication Result:
9      12      15
-----
Process exited after 0.057 seconds with return value 0
Press any key to continue . . .

```

The compilation results window shows:

```

Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#6.2 MultiplicationOfTwoMatrices.exe
- Output Size: 1.83459758758545 MiB
- Compilation Time: 2.38s

```

**7#** Write a C++ program to count and display positive, negative, odd and even numbers in an array.

## Code:

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#7 CountAndDisplayOfEven,Odd,Neg,PosNumbers.cpp - Dev-C++ 5.11

File Edit Search View Project Execute Tools AStyle Window Help

Project Classes Debug #7 CountAndDisplayOfEven,Odd,Neg,PosNumbers.cpp

```
1 //Write a C++ program to count and display positive, negative, odd and even numbers in an array.
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int len, neg=0, zero=0, pos=0, even=0, odd=0;
8
9     cout<<"Enter length of array : ";
10    cin>>len;
11
12    int array[len];
13
14    //Taking array's elements from the user:
15    for(int i=0; i<len; i++)
16    {
17        cout<<"Enter element "<<i+1<<" : ";
18        cin>>array[i];
19    }
20    cout<<endl;
21
22    //count and display for even, odd, positive and negative numbers;
23    for(int i=0; i<len; i++)
24    {
25        if(array[i]>0)
26        {
27            if(array[i]%2==0)
28            {
29                cout<<array[i]<<" is Positive and Even."<<endl;
30                even++;
31            }
32        }
33    }
34 }
```

Compiler Resources Compile Log Debug Find Results

Line: 1 Col: 1 Sel: 0 Lines: 71 Length: 1441 Insert Done parsing in 0.641 seconds

ENG IN 24-Sep-23 2:24 AM

The screenshot shows the Dev-C++ IDE interface with the following details:

- Title Bar:** C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#7 CountAndDisplayOfEven,Odd,Neg,PosNumbers.cpp - Dev-C++ 5.11
- Menu Bar:** File, Edit, Search, View, Project, Execute, Tools, AStyle, Window, Help
- Toolbar:** Standard icons for file operations like Open, Save, Print, etc.
- Compiler Status:** TDH-GCC 4.9.2 64-bit Release
- Project Explorer:** Shows the project structure with files like "globals" and "CountAndDisplayOfEven,Odd,Neg,PosNumbers.cpp".
- Code Editor:** The main window displays the C++ code. The code counts and prints the frequency of even, odd, negative, and positive numbers from an array. It uses nested loops and conditional statements to categorize each element. The code includes comments explaining its logic.
- Toolbars:** Compiler, Resources, Compile Log, Debug, Find Results
- Status Bar:** Line: 1 Col: 1 Sel: 0 Lines: 71 Length: 1441 Insert Done parsing in 0.641 seconds
- System Taskbar:** Shows the date (24-Sep-23), time (2:24 AM), and various system icons.

```
35     |         odd++;
36     |
37     |         pos++;
38     }
39     |     else if(array[i]==0)
40     {
41         cout<<array[i]<<" is Zero and zero consider as even also."<<endl;
42         even++;
43         zero++;
44     }
45     |     else
46     {
47         |         if(array[i]%2==0)
48         {
49             |             cout<<array[i]<<" is Negative and Even."<<endl;
50             even++;
51         }
52         |         else
53         {
54             |                 cout<<array[i]<<" is Negative and odd."<<endl;
55             odd++;
56         }
57         neg++;
58     }
59
60
61 //Print the counts:
62 cout<<endl<<endl;
63 cout<<"Frequency of zeros are : "<<zero<<endl;
64 cout<<"Frequency of positive Number are : "<<pos<<endl;
65 cout<<"Frequency of negative Number are : "<<neg<<endl;
66 cout<<"Frequency of even numbers are : "<<even<<endl;
```

## Output:

The screenshot shows the Dev-C++ IDE interface. The code in the editor is as follows:

```

35     odd++;
36 }
37 pos++;
38 }
39 else if(array[i]==0)
40 {
41     cout<<"array[i]<<" is Zero and zero consider as even also."<<endl;
42     even++;
43     zero++;
44 }
45 else
46 {
47     if(array[i]%2==0)
48     {
49         cout<<"array[i]<<" is Negative and Even."<<endl;
50         even++;
51     }
52     else
53     {
54         cout<<"array[i]<<" is Negative and odd."<<endl;
55         odd++;
56     }
57 neg++;
58 }

```

The terminal window displays the following output:

```

Enter length of array : 6
Enter element 1 : 0
Enter element 2 : 0
Enter element 3 : 1
Enter element 4 : 3
Enter element 5 : -5
Enter element 6 : -6
0 is Zero and zero consider as even also.
0 is Zero and zero consider as even also.
1 is Positive and Odd.
3 is Positive and Odd.
-5 is Negative and odd.
-6 is Negative and Even.

Frequency of zeros are : 2
Frequency of positive Number are : 2
Frequency of negative Number are : 2
Frequency of even numbers are : 3
Frequency of odd numbers are : 3
-----.
Process exited after 16.75 seconds with return value 0
Press any key to continue . . .

```

The compiler results window shows:

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#7 CountAndDisplayOfEven,Odd,Neg,PosNumbers.exe
- Output Size: 1.83363151550293 MiB
- Compilation Time: 1.94s

**8#** Write a C++ program to merge two sorted arrays into another array in sorted order.

## Code:

The screenshot shows the Dev-C++ IDE interface. The code in the editor is as follows:

```

1 //Program to merge two sorted arrays into another array in sorted order.
2
3 #include<iostream>
4 using namespace std;
5 int main()
6 {
7     int len1, len2, len3, temp;
8
9     cout<<"Enter the length of array1 : ";
10    cin>>len1;
11
12    int array1[len1];
13
14    cout<<endl;
15    cout<<"Enter elements of array1"<<endl;
16    for(int i=0; i<len1; i++)
17    {
18        cout<<"Enter value for element "<<i+1<<" : ";
19        cin>>array1[i];
20    }
21    cout<<endl;
22
23    //method to sort array1:
24    for(int i=0; i<len1-1; i++)
25    {
26        for(int j=0; j<len1-1; j++)
27        {
28            if(array1[j]>array1[j+1])
29            {
30                temp=array1[j];
31                array1[j]=array1[j+1];
32                array1[j+1]=temp;
33            }
34        }
35    }
36
37    len3=len1+1;
38    int array2[len3];
39
40    for(int i=0; i<len1; i++)
41    {
42        array2[i]=array1[i];
43    }
44
45    cout<<"Merged array is : ";
46    for(int i=0; i<len3; i++)
47    {
48        cout<<array2[i]<<" ";
49    }
50
51    cout<<endl;
52
53    cout<<"Length of merged array is : ";
54    cout<<len3;
55
56    return 0;
57 }

```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#8 MergeTwoSortedArrays.cpp - Dev-C++ 5.11

```

File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals) Project Classes Debug #8 MergeTwoSortedArrays.cpp
31     array1[j]=array1[j+1];
32 }
33 }
34 }
35 }
36
//to display array1:
cout<<"Here is your 1st sorted array : "<<endl;
cout<<"{ ";
for(int i=0; i<len1; i++)
{
    cout<<array1[i];
    if(i<len1-1) cout<< " , ";
}
cout<<" }"<<endl<<endl;
47 cout<<"Enter the length of array2 : ";
48 cin>>len2;
cout<<endl;
51 int array2[len2];
52
//taking array2's elements from user:
cout<<endl<<"Enter elements of array2"<<endl;
for(int i=0; i<len2; i++)
{
    cout<<"Enter value for element "<<i+1<<" : ";
    cin>>array2[i];
}
cout<<endl<<endl;
56 //method to sort array2:
60 cout<<endl<<endl;
62
63 //method to sort array2:
64 for(int i=0; i<len2; i++)
{
    for(int j=0; j<len2-1; j++)
    {
        if(array2[j]>array2[j+1])
        {
            temp=array2[j];
            array2[j]=array2[j+1];
            array2[j+1]=temp;
        }
    }
}
68
70
72
74
76 //to display array2:
77 cout<<"Here is your 2nd sorted array : "<<endl;
78 cout<<"{ ";
79 for(int i=0; i<len2; i++)
{
    cout<<array2[i];
    if(i<len2-1) cout<< " , ";
}
cout<<" }"<<endl<<endl;
85 len3=len1+len2;
86 int MergeArray[len3];
87 //Method of merge two sorted arrays into new array:
88 int i=0,j=0,k=0;
89
90 while(i<len1) MergeArray[k++]=array1[i++];
91

```

Compiler Resources Compile Log Debug Find Results

Line: 22 Col: 5 Sel: 0 Lines: 120 Length: 2257 Insert Done parsing in 0 seconds

2:27 AM 24-Sep-23

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#8 MergeTwoSortedArrays.cpp - Dev-C++ 5.11

```

File Edit Search View Project Execute Tools AStyle Window Help
TDM-GCC 4.9.2 64-bit Release
(globals) Project Classes Debug #8 MergeTwoSortedArrays.cpp
60 cout<<endl<<endl;
62
63 //method to sort array2:
64 for(int i=0; i<len2; i++)
{
    for(int j=0; j<len2-1; j++)
    {
        if(array2[j]>array2[j+1])
        {
            temp=array2[j];
            array2[j]=array2[j+1];
            array2[j+1]=temp;
        }
    }
}
68
70
72
74
76 //to display array2:
77 cout<<"Here is your 2nd sorted array : "<<endl;
78 cout<<"{ ";
79 for(int i=0; i<len2; i++)
{
    cout<<array2[i];
    if(i<len2-1) cout<< " , ";
}
cout<<" }"<<endl<<endl;
85 len3=len1+len2;
86 int MergeArray[len3];
87 //Method of merge two sorted arrays into new array:
88 int i=0,j=0,k=0;
89
90 while(i<len1) MergeArray[k++]=array1[i++];
91

```

Compiler Resources Compile Log Debug Find Results

Line: 22 Col: 5 Sel: 0 Lines: 120 Length: 2257 Insert Done parsing in 0 seconds

2:28 AM 24-Sep-23

The screenshot shows the Dev-C++ IDE interface. The code editor window displays a C++ program named #8 MergeTwoSortedArrays.cpp. The code implements a merge operation on two sorted arrays (array1 and array2) to produce a new sorted array (MergeArray). It includes sections for initializing arrays, merging them, and displaying the result. The code is annotated with comments explaining its purpose. The status bar at the bottom shows the file path as C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#8 MergeTwoSortedArrays.cpp - Dev-C++ 5.11.

```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#8 MergeTwoSortedArrays.cpp - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #8 MergeTwoSortedArrays.cpp
90
91     while(i<len1) MergeArray[k++]=array1[i++];
92     while(j<len2) MergeArray[k++]=array2[j++];
93
94     //Method to sort new array:
95
96     for(int i=0; i<len3; i++)
97     {
98         for(int j=0; j<len3-1; j++)
99         {
100            if(MergeArray[j]>MergeArray[j+1])
101            {
102                temp=MergeArray[j];
103                MergeArray[j]=MergeArray[j+1];
104                MergeArray[j+1]=temp;
105            }
106        }
107    }
108
109    //To display the merge array:
110    cout<<"Here is your sorted merge array : "<<endl<<"{ ";
111    for(int i=0; i<len3; i++)
112    {
113        cout<<MergeArray[i];
114        if(i<len3-1) cout<< " , ";
115    }
116    cout<<" } ";
117
118    return 0;
119
120

```

Compiler Resources Compile Log Debug Find Results

Line: 22 Col: 5 Sel: 0 Lines: 120 Length: 2257 Insert Done parsing in 0 seconds

2:28 AM 24-Sep-23

## Output:

The screenshot shows the Dev-C++ IDE interface during execution. The code editor window displays the same merge algorithm. A separate terminal window shows the execution process. It prompts for the lengths of array1 and array2, then displays their sorted contents. Finally, it merges them into a single sorted array and prints the result. The status bar at the bottom shows the file path as C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#8 MergeTwoSortedArrays.cpp - [Executing] - Dev-C++ 5.11.

```

C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#8 MergeTwoSortedArrays.cpp - [Executing] - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes Debug #8 MergeTwoSortedArrays.cpp
90
91     while(i<len1) MergeArray[k++]=array1[i++];
92     while(j<len2) MergeArray[k++]=array2[j++];
93
94     //Method to sort new array:
95
96     for(int i=0; i<len3; i++)
97     {
98         for(int j=0; j<len3-1; j++)
99         {
100            if(MergeArray[j]>MergeArray[j+1])
101            {
102                temp=MergeArray[j];
103                MergeArray[j]=MergeArray[j+1];
104                MergeArray[j+1]=temp;
105            }
106        }
107    }
108
109    //To display the merge array:
110    cout<<"Here is your sorted merge array : "<<endl<<"{ ";
111    for(int i=0; i<len3; i++)
112    {
113        cout<<MergeArray[i];
114        if(i<len3-1) cout<< " , ";
115    }
116    cout<<" } ";
117
118    return 0;
119
120

```

Compiler Resources Compile Log Debug Find Results Close

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: C:\MOHD YUSUF\MY DATA\AMU\MCA 2023-25\SEM 1\LAB\Week 5\#8 MergeTwoSortedArrays.exe
- Output Size: 1.034589045166 MiB
- Compilation Time: 1.78s

Line: 22 Col: 5 Sel: 0 Lines: 120 Length: 2257 Insert Done parsing in 0 seconds

2:33 AM 24-Sep-23

**9# Write a C++ program to find the frequency of a particular number in a list of integers.**

### Code:

```

1 #include<iostream> //Program to check frequency of an integer in the list;
2 using namespace std;
3 int main()
4 {
5     int len, frequency, num;
6     cout<<"Enter the length of the list : ";
7     cin>>len;
8     int list[len];
9     cout<<"Enter the elements of the list : "<<endl; //taking elements of the list from user:
10    for(int i=0; i<len; i++)
11    {
12        cout<<"Enter element "<<i+1<<" : ";
13        cin>>list[i];
14    }
15    cout<<endl;
16    cout<<"Here is your entered list :"<<endl; //Display the entered list:
17    cout<<"{ ";
18    for(int i=0; i<len; i++)
19    {
20        cout<<list[i];
21        if(i<len-1) cout<<, ;
22    }
23    cout<<" }"<<endl<<endl;
24    cout<<"Enter particular number from the list whose frequency you want to check : ";
25    cin>>num;
26    for(int i=0; i<len; i++) //checking the frequency :
27    {
28        if(list[i]==num) frequency++;
29    }
30    cout<<endl;
31    cout<<"The frequency of "<<num<<" is : "<<frequency; //display the frequency output:
32    return 0;
}

```

### Output:

```

1 #include<iostream> //Program to check frequency of an integer in the list;
2 using namespace std;
3 int main()
4 {
5     int len, frequency, num;
6     cout<<"Enter the length of the list : ";
7     cin>>len;
8     int list[len];
9     cout<<"Enter the elements of the list : "<<endl; //taking elements of the list from user:
10    for(int i=0; i<len; i++)
11    {
12        cout<<"Enter element "<<i+1<<" : ";
13        cin>>list[i];
14    }
15    cout<<endl;
16    cout<<"Here is your entered list :"<<endl; //Display the entered list:
17    cout<<"{ ";
18    for(int i=0; i<len; i++)
19    {
20        cout<<list[i];
21        if(i<len-1) cout<<, ;
22    }
23    cout<<" }"<<endl<<endl;
24    cout<<"Enter particular number from the list whose frequency you want to check : ";
25    cin>>num;
26    for(int i=0; i<len; i++) //checking the frequency :
27    {
28        if(list[i]==num) frequency++;
29    }
30    cout<<endl;
31    cout<<"The frequency of "<<num<<" is : "<<frequency; //display the frequency output:
32    return 0;
}

Enter the length of the list : 6
Enter the elements of the list :
Enter element 1 : 1
Enter element 2 : 21
Enter element 3 : 21
Enter element 4 : 21
Enter element 5 : 21
Enter element 6 : 5

Here is your entered list :
{ 1 , 21 , 21 , 21 , 21 , 5 }

Enter particular number from the list whose frequency you want to check : 21
The frequency of 21 is : 4
Process exited after 16.42 seconds with return value 0
Press any key to continue . . .

```