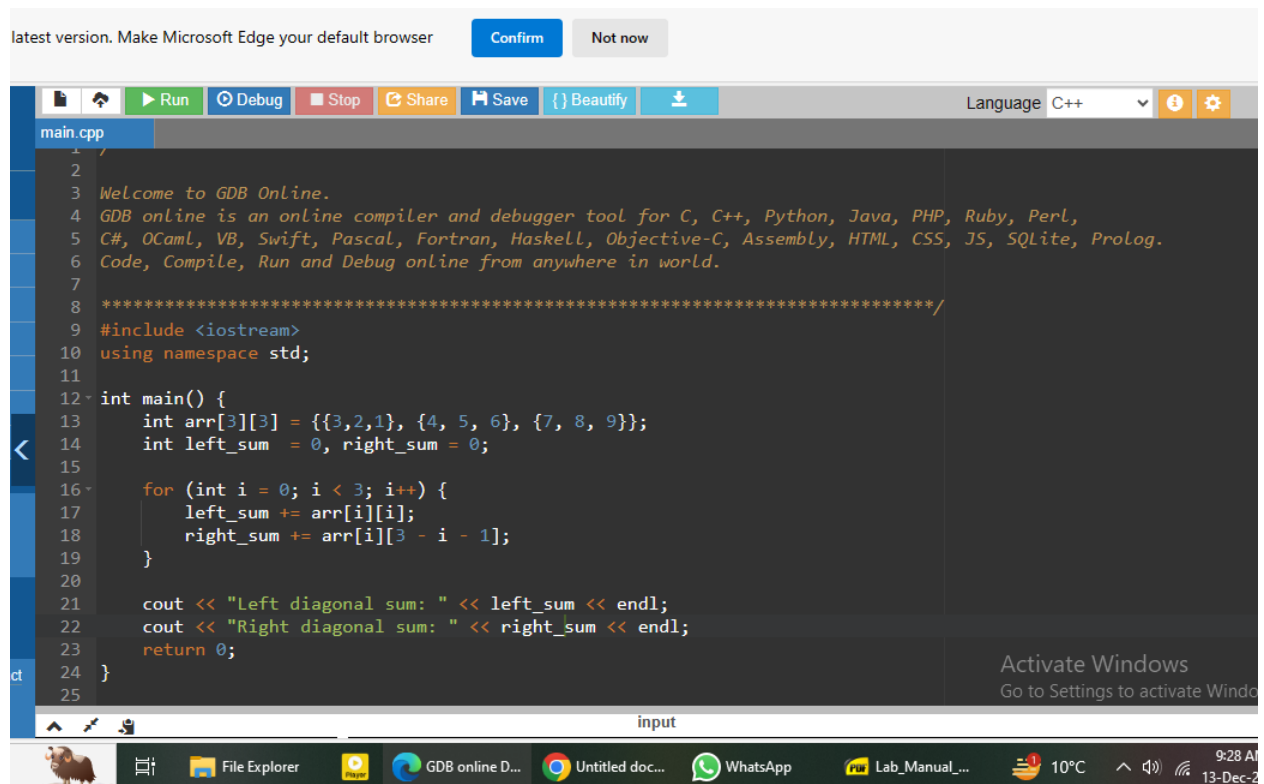


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**CMS ID:463157**

**Course: FOP.**

**Task no .1:**

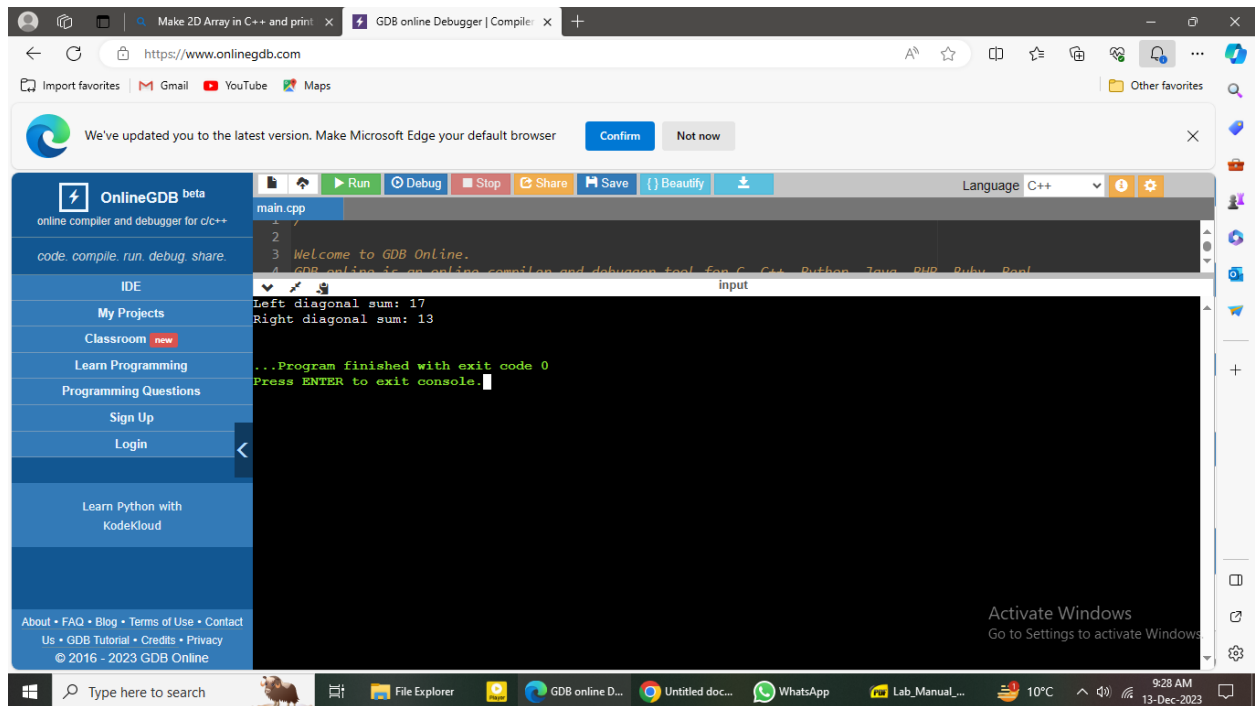


The screenshot displays the GDB Online IDE interface. At the top, a notification bar prompts the user to make Microsoft Edge their default browser, with 'Confirm' and 'Not now' buttons. Below this is a toolbar with icons for file operations, running, debugging, and saving. The main editor area shows a C++ file named 'main.cpp' with the following code:

```
1 //
2
3 Welcome to GDB Online.
4 GDB online is an online compiler and debugger tool for C, C++, Python, Java, PHP, Ruby, Perl,
5 C#, OCaml, VB, Swift, Pascal, Fortran, Haskell, Objective-C, Assembly, HTML, CSS, JS, SQLite, Prolog.
6 Code, Compile, Run and Debug online from anywhere in world.
7
8 *****/
9 #include <iostream>
10 using namespace std;
11
12 int main() {
13     int arr[3][3] = {{3,2,1}, {4, 5, 6}, {7, 8, 9}};
14     int left_sum = 0, right_sum = 0;
15
16     for (int i = 0; i < 3; i++) {
17         left_sum += arr[i][i];
18         right_sum += arr[i][3 - i - 1];
19     }
20
21     cout << "Left diagonal sum: " << left_sum << endl;
22     cout << "Right diagonal sum: " << right_sum << endl;
23     return 0;
24 }
25
```

At the bottom of the editor, there is an 'input' field. The Windows taskbar is visible at the very bottom, showing various open applications like File Explorer, GDB online D..., and WhatsApp, along with system icons for temperature and time (9:28 AM, 13-Dec-2020).

## output:



The screenshot shows the OnlineGDB interface with the following output in the console:

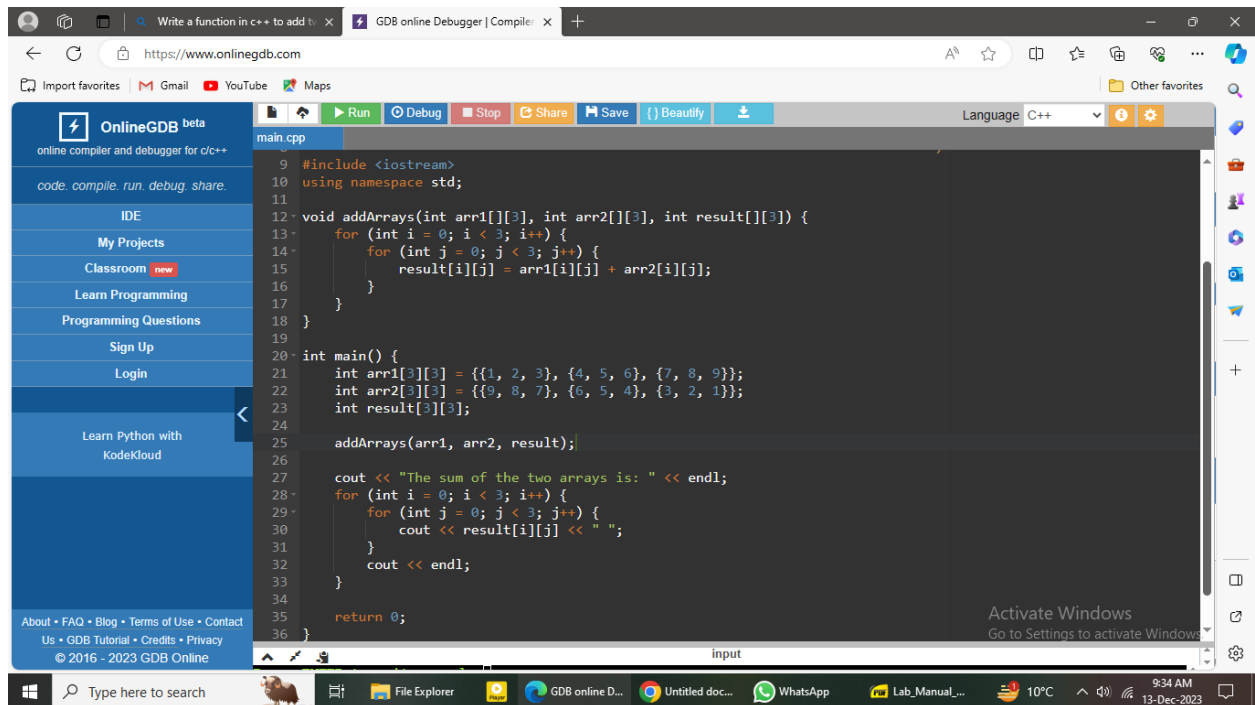
```
1 //
2
3 Welcome to GDB Online.
4 GDB online is an online compiler and debugger tool for C, C++, Python, Java, PHP, Ruby, Perl, ...
...Program finished with exit code 0
Press ENTER to exit console.
```

The code editor shows a file named `main.cpp` with the following content:

```
1 //
2
3 Welcome to GDB Online.
4 GDB online is an online compiler and debugger tool for C, C++, Python, Java, PHP, Ruby, Perl, ...
```

The taskbar at the bottom shows the system clock as 9:28 AM on 13-Dec-2023.

## TASK NO 2:

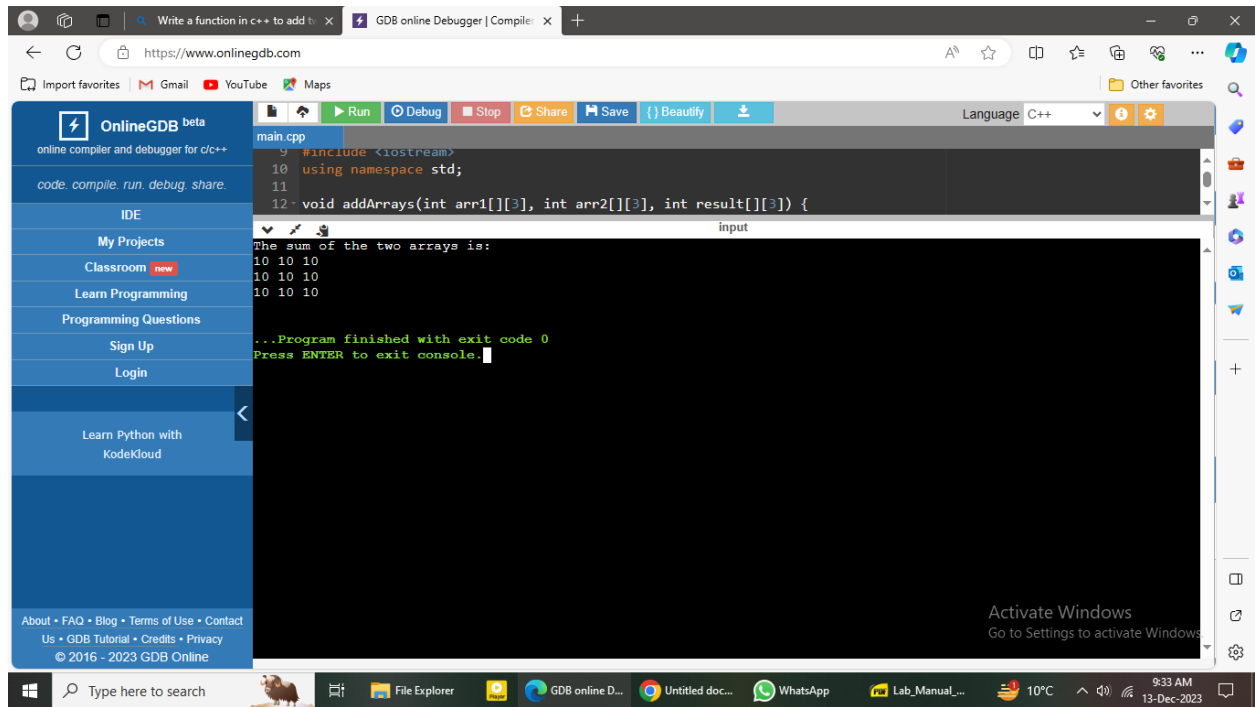


The screenshot shows the OnlineGDB interface with the following C++ code in the editor:

```
9 #include <iostream>
10 using namespace std;
11
12 void addArrays(int arr1[][3], int arr2[][3], int result[][3]) {
13     for (int i = 0; i < 3; i++) {
14         for (int j = 0; j < 3; j++) {
15             result[i][j] = arr1[i][j] + arr2[i][j];
16         }
17     }
18 }
19
20 int main() {
21     int arr1[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
22     int arr2[3][3] = {{9, 8, 7}, {6, 5, 4}, {3, 2, 1}};
23     int result[3][3];
24
25     addArrays(arr1, arr2, result);
26
27     cout << "The sum of the two arrays is: " << endl;
28     for (int i = 0; i < 3; i++) {
29         for (int j = 0; j < 3; j++) {
30             cout << result[i][j] << " ";
31         }
32         cout << endl;
33     }
34
35     return 0;
36 }
```

The taskbar at the bottom shows the system clock as 9:34 AM on 13-Dec-2023.

## Output:



The screenshot shows the OnlineGDB website interface. On the left is a sidebar with navigation links: OnlineGDB beta, code.compile.run.debug.share., IDE, My Projects, Classroom (new), Learn Programming, Programming Questions, Sign Up, Login, Learn Python with KodeKloud, and footer links (About, FAQ, Blog, Terms of Use, Contact Us, GDB Tutorial, Credits, Privacy, © 2016 - 2023 GDB Online). The main area displays a C++ code editor with the following code:

```
main.cpp
9 #include <iostream>
10 using namespace std;
11
12 void addArrays(int arr1[][3], int arr2[][3], int result[][3]) {
    // ...
}
```

Below the code editor is a terminal window showing the program's output:

```
input
The sum of the two arrays is:
10 10 10
10 10 10
10 10 10
...Program finished with exit code 0
Press ENTER to exit console.
```

The bottom of the image shows a Windows taskbar with various application icons and a system tray displaying the date and time (9:33 AM, 13-Dec-2023).

## Task no.3:

```

0  #include <iostream>
1  using namespace std;
2
3  void transpose(int arr[3][3]) {
4      int temp;
5      for (int i = 0; i < 3; i++) {
6          for (int j = i; j < 3; j++) {
7              temp = arr[i][j];
8              arr[i][j] = arr[j][i];
9              arr[j][i] = temp;
10         }
11     }
12 }
13
14 int main() {
15     int arr[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
16     cout << "Original Matrix:" << endl;
17     for (int i = 0; i < 3; i++) {
18         for (int j = 0; j < 3; j++) {
19             cout << arr[i][j] << " ";
20         }
21         cout << endl;
22     }
23     transpose(arr);
24     cout << "Transposed Matrix:" << endl;
25     for (int i = 0; i < 3; i++) {
26         for (int j = 0; j < 3; j++) {
27             cout << arr[i][j] << " ";
28         }
29         cout << endl;
30     }
31     return 0;
32 }

```

```

Original Matrix:
1 2 3
4 5 6
7 8 9
Transposed Matrix:
1 4 7
2 5 8
3 6 9

...Program finished with exit code 0
Press ENTER to exit console.

```

#### Task no.4;

```
main.cpp
11 #include <iostream>
12 using namespace std;
13
14 void multiply(int a[][3], int b[][3], int result[][3]) {
15     for (int i = 0; i < 3; i++) {
16         for (int j = 0; j < 3; j++) {
17             result[i][j] = 0;
18             for (int k = 0; k < 3; k++) {
19                 result[i][j] += a[i][k] * b[k][j];
20             }
21         }
22     }
23
24 int main() {
25     int a[3][3] = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
26     int b[3][3] = {{9, 8, 7}, {6, 5, 4}, {3, 2, 0}};
27     int result[3][3];
28
29     multiply(a, b, result);
30
31     cout << "Resultant matrix is: " << endl;
32     for (int i = 0; i < 3; i++) {
33         for (int j = 0; j < 3; j++) {
34             cout << result[i][j] << " ";
35         }
36         cout << endl;
37     }
38     return 0;
}
```

input

```

Resultant matrix is:
30 24 15
84 69 48
138 114 81

...Program finished with exit code 0
Press ENTER to exit console.

```

## TASK no 5:

The screenshot shows the OnlineGDB web interface. The code editor contains the following C++ code:

```

main.cpp
4 GDB online is an online compiler and debugger tool for C, C++, Python, Java, PHP, Ruby, Perl,
5 C#, OCaml, VB, Swift, Pascal, Fortran, Haskell, Objective-C, Assembly, HTML, CSS, JS, SQLite, Pro
6 Code, Compile, Run and Debug online from anywhere in world.
7
8 *****/
9 #include <iostream>
10 using namespace std;
11
12 void print_table(int num, int i) {
13     if (i > 10) {
14         return;
15     }
16     cout << num << " * " << i << " = " << num * i << endl;
17     print_table(num, i + 1);
18 }
19
20 int main() {
21     int num = 15;
22     print_table(num, 1);
23     return 0;
24 }
25

```

The console output shows the first three rows of the multiplication table:

```

15 * 8 = 120
15 * 9 = 135
15 * 10 = 150

```

The console also shows the program finished with exit code 0 and a prompt to press ENTER to exit the console.

## Home Task

```

#include <iostream>
using namespace std;

```

```

int main() {
    double matrix[3][3], adjoint[3][3], inverse[3][3];
    double determinant = 0;

```

```

cout << "Enter the elements of the matrix: " << endl;
for(int i = 0; i < 3; i++) {
    for(int j = 0; j < 3; j++) {
        cin >> matrix[i][j];
    }
}

determinant = matrix[0][0] * (matrix[1][1] * matrix[2][2] - matrix[2][1] *
matrix[1][2]) - matrix[0][1] * (matrix[1][0] * matrix[2][2] - matrix[1][2] *
matrix[2][0]) + matrix[0][2] * (matrix[1][0] * matrix[2][1] - matrix[1][1] *
matrix[2][0]);

adjoint[0][1] = -(matrix[1][0] * matrix[2][2] - matrix[1][2] * matrix[2][0]);
adjoint[0][2] = matrix[1][0] * matrix[2][1] - matrix[1][1] * matrix[2][0];
adjoint[1][0] = -(matrix[0][1] * matrix[2][2] - matrix[0][2] * matrix[2][1]);
adjoint[1][1] = matrix[0][0] * matrix[2][2] - matrix[0][2] * matrix[2][0];
adjoint[1][2] = -(matrix[0][0] * matrix[2][1] - matrix[0][1] * matrix[2][0]);
adjoint[2][0] = matrix[0][1] * matrix[1][2] - matrix[0][2] * matrix[1][1];
adjoint[2][1] = -(matrix[0][0] * matrix[1][2] - matrix[0][2] * matrix[1][0]);
adjoint[2][2] = matrix[0][0] * matrix[1][1] - matrix[0][1] * matrix[1][0];

for(int i = 0; i < 3; i++) {
    for(int j = 0; j < 3; j++) {
        inverse[i][j] = adjoint[i][j] / determinant;
    }
}

cout << "The inverse of the matrix is: " << endl;
for(int i = 0; i < 3; i++) {
    for(int j = 0; j < 3; j++) {
        cout << inverse[i][j] << " ";
    }
    cout << endl;
}

```

Enter the elements of the matrix:

3  
4  
5  
6  
7  
8  
9  
1  
5

The inverse of the matrix is:

-0 -1.16667 1.58333  
0.416667 0.833333 -0.916667  
0.0833333 -0.166667 0.0833333

...Program finished with exit code 0  
Press ENTER to exit console.