



National University of Sciences and Technology (NUST)
School of Electrical Engineering and Computer Science

**Department of Computer
Science**

CS 212: Object Oriented Programming

Class: BEE-14D

Fall 2023

Lab03: 1D and 2D arrays

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Date: 25th September, 2023

Time: 10:00 a.m. - 12:50 p.m. & 2:00 – 4:00 pm

Instructor: Mehreen

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Task 1: Write a program that asks the user to type 10 integers of an array. The program must compute and write how many integers are greater than or equal to 10.

Code:

```
#include <iostream>

int main() {
    int input[10], check = 0, output[10];
    std::cout << "Enter 10 integers: ";
    for (int i = 0; i < 10; i++) {
        std::cin >> input[i];
        if (input[i] >= 10) {
            check++;
        }
    }
    std::cout << "There are " << check << " integers greater than or equal to
10." << std::endl;
    return 0;
}
```

Output Screenshots

The screenshot shows the Microsoft Visual Studio Debug Console window. The title bar says "Microsoft Visual Studio Debug Console". The console displays the following text:

```
Enter 10 integers: 12
23
0
30
10
15
5
6
2
1101
There are 6 integers greater than or equal to 10.
```



Task 2: Write a C++ function to add two matrices using multidimensional arrays.
You can use predefined sizes.

Code:

```
#include <iostream>
void sum(int matrix1[2][2], int matrix2[2][2], int output[2][2]) {
    for (int i = 0; i < 2; i++) {
        for (int j = 0; j < 2; j++) {
            output[i][j] = matrix1[i][j] + matrix2[i][j];
        }
    }
}

int main() {
    int M_1[2][2], M_2[2][2], output[2][2];
    std::cout << "Enter the enteries for first matrix: ";
    for (int m = 0; m < 2; m++) {
        for (int n = 0; n < 2; n++) {
            std::cin >> M_1[m][n];
        }
    }
    std::cout << "Enter the enteries for second matrix: ";
    for (int m = 0; m < 2; m++) {
        for (int n = 0; n < 2; n++) {
            std::cin >> M_2[m][n];
        }
    }
    sum(M_1, M_2, output);
    for (int m = 0; m < 2; m++) {
        for (int n = 0; n < 2; n++) {
            std::cout << output[m][n] << " ";
        }
    }
    std::cout << std::endl;
}
return 0;
}
```

Output Screenshots

The screenshot shows the Microsoft Visual Studio Debug Console window. It displays the following interaction:

```
Microsoft Visual Studio Debug Console
Enter the enteries for first matrix: 1
2
3
4
Enter the enteries for second matrix: 1
2
3
4
2 4
6 8
C:\Users\Lenovo\source\repos\Project1\x64\Debug\Project1.exe (process 51708) exited with code 0.
Press any key to close this window . . .
```



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Task 3: Write a program in C++ to find the transpose of a matrix.

Code:

```
#include <iostream>

int main() {
    int input[10][10], output[10][10], rows, columns;
    std::cout << "Enter the number of rows and columns (Maximum limit: 10): ";
    std::cin >> rows >> columns;
    std::cout << "Enter the enteries for matrix: ";
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < columns; j++) {
            std::cin >> input[i][j];
        }
    }
    std::cout << "The given matrix is: " << std::endl;
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < columns; j++) {
            std::cout << input[i][j] << " ";
        }
        std::cout << std::endl;
    }
    std::cout << "Transpose of matrix is: " << std::endl;
    for (int i = 0; i < rows; i++) {
        for (int j = 0; j < columns; j++) {
            output[j][i] = input[i][j];
        }
        std::cout << std::endl;
    }
    for (int i = 0; i < columns; i++) {
        for (int j = 0; j < rows; j++) {
            std::cout << output[i][j] << " ";
        }
        std::cout << std::endl;
    }
    return 0;
}
```

Output Screenshots

The screenshot shows the Microsoft Visual Studio Debug Console window. It displays the following interaction:

```
Microsoft Visual Studio Debug Console
Enter the number of rows and columns (Maximum limit: 10): 3
Enter the enteries for matrix: 1 2 3
4 5 6
The given matrix is:
1 2 3
4 5 6
Transpose of matrix is:

1 4
2 5
3 6

C:\Users\Lenovo\source\repos\Project1\x64\Debug\Project1.exe (process 60188) exited with code 0.
Press any key to close this window . . .
```