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 Tahir

Lab Engineer: Mehwish Kiran

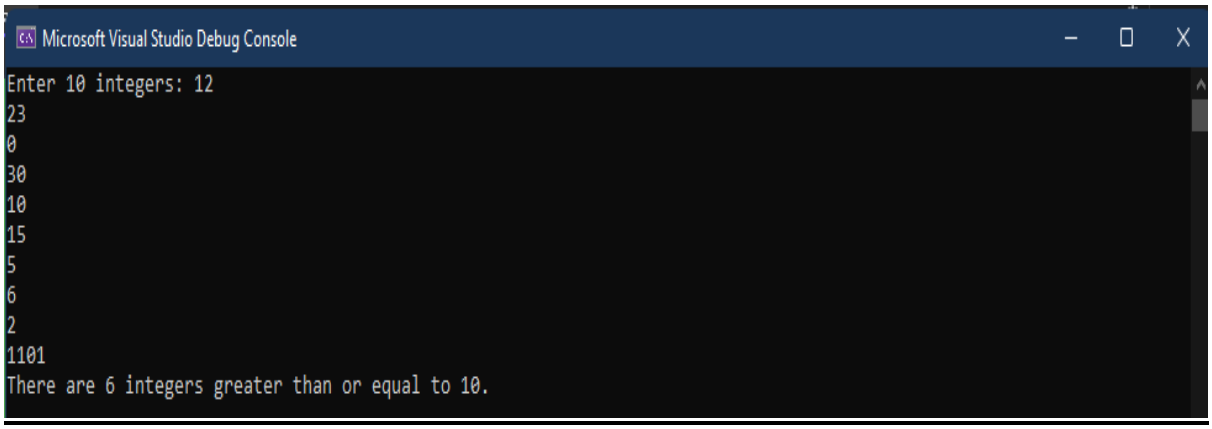
Task 1: **Write a program that asks the user to type 10 integers of an array. The program must compute and write how many integers are greater than or equal to 10.**

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



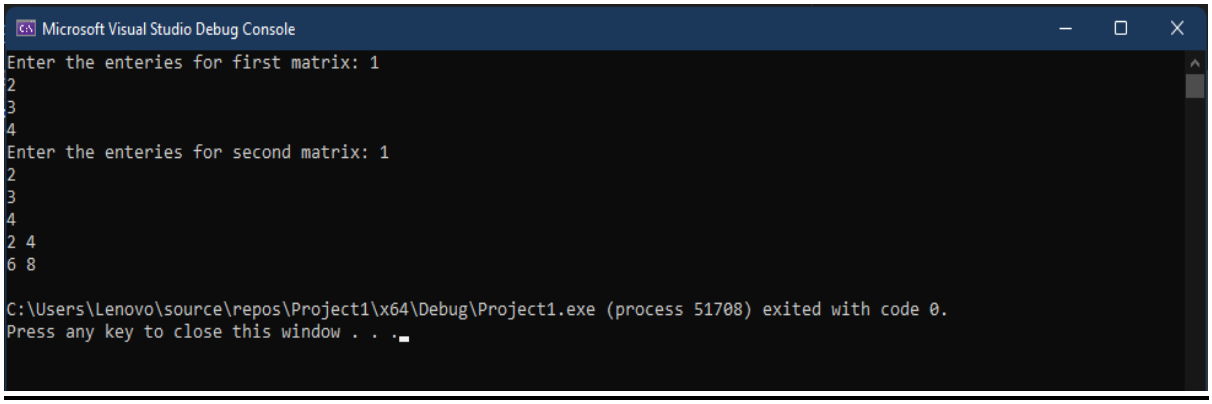
Task 2: **Write a C++ function to add two matrices using multidimensional arrays. You can use predefined sizes.**

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



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