



ChatGPT

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Today

- Matrix Operations in C++
- C++ Array and Algorithms
- C++ Linked List Programs
- Linked List Operations

Yesterday

- Sci-Fi Group Names
- Coding Student Illustration Request
- DSA Program Solutions

Previous 7 Days

- Pointers in C
- Perceptron Information Inquiry

1. Write a program to interchange the row and column of a matrix.
 2. Write a program to add two matrices.
 3. Write a program to calculate the multiplication of two matrices.
 4. Write a program to calculate the row sum and column sum of a matrix.
- easy and simple way, with c++ with sample input and sample output like cin, cout



Here are the C++ programs for the tasks you requested, presented in a straightforward manner using `cin` and `cout` with sample input and output.

1. Program to interchange the row and column of a matrix (Transpose)

```
cpp Copy code

#include <iostream>
using namespace std;

int main() {
    int rows, cols;
    cout << "Enter number of rows and columns: ";
    cin >> rows >> cols;
    int matrix[rows][cols], transpose[cols][rows];

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

    // Transposing the matrix
    for (int i = 0; i < rows; ++i)
        for (int j = 0; j < cols; ++j)
            transpose[j][i] = matrix[i][j];

    cout << "Transposed matrix:" << endl;
    for (int i = 0; i < cols; ++i) {
        for (int j = 0; j < rows; ++j)
            cout << transpose[i][j] << " ";
        cout << endl;
    }

    return 0;
}
```

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Sample Input/Output:

```
yaml Copy code

Enter number of rows and columns: 2 3
Enter elements of the matrix:
1 2 3
4 5 6
Transposed matrix:
1 4
2 5
3 6
```

2. Program to add two matrices

```
cpp Copy code

#include <iostream>
using namespace std;

int main() {
    int rows, cols;
    cout << "Enter number of rows and columns: ";
    cin >> rows >> cols;
    int matrix1[rows][cols], matrix2[rows][cols], sum[rows][cols];

    cout << "Enter elements of the first matrix:" << endl;
    for (int i = 0; i < rows; ++i)
```

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```

        for (int j = 0; j < cols; ++j)
            cin >> matrix1[i][j];

        cout << "Enter elements of the second matrix:" << endl;
        for (int i = 0; i < rows; ++i)
            for (int j = 0; j < cols; ++j)
                cin >> matrix2[i][j];

        // Adding matrices
        for (int i = 0; i < rows; ++i)
            for (int j = 0; j < cols; ++j)
                sum[i][j] = matrix1[i][j] + matrix2[i][j];

        cout << "Sum of matrices:" << endl;
        for (int i = 0; i < rows; ++i) {
            for (int j = 0; j < cols; ++j)
                cout << sum[i][j] << " ";
            cout << endl;
        }

        return 0;
    }
}

```

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Sample Input/Output:

mathematica

 Copy code

```

Enter number of rows and columns: 2 2
Enter elements of the first matrix:
1 2
3 4
Enter elements of the second matrix:
5 6
7 8
Sum of matrices:
6 8
10 12

```

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3. Program to calculate the multiplication of two matrices

cpp

 Copy code

```

#include <iostream>
using namespace std;

int main() {
    int rows1, cols1, rows2, cols2;
    cout << "Enter rows and columns of first matrix: ";
    cin >> rows1 >> cols1;
    cout << "Enter rows and columns of second matrix: ";
    cin >> rows2 >> cols2;

    if (cols1 != rows2) {
        cout << "Matrix multiplication not possible!" << endl;
        return 0;
    }

    int matrix1[rows1][cols1], matrix2[rows2][cols2], product[rows1][cols2] = {0};

    cout << "Enter elements of the first matrix:" << endl;
    for (int i = 0; i < rows1; ++i)
        for (int j = 0; j < cols1; ++j)
            cin >> matrix1[i][j];

    cout << "Enter elements of the second matrix:" << endl;
    for (int i = 0; i < rows2; ++i)
        for (int j = 0; j < cols2; ++j)
            cin >> matrix2[i][j];

    // Multiplying matrices
    for (int i = 0; i < rows1; ++i)
        for (int j = 0; j < cols2; ++j)
            for (int k = 0; k < cols1; ++k)
                product[i][j] += matrix1[i][k] * matrix2[k][j];

    cout << "Product of matrices:" << endl;
    for (int i = 0; i < rows1; ++i) {
        for (int j = 0; j < cols2; ++j)
            cout << product[i][j] << " ";
        cout << endl;
    }
}

```

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```
    return 0;
}
```

Sample Input/Output:

sql

Copy code

```
Enter rows and columns of first matrix: 2 3
Enter rows and columns of second matrix: 3 2
Enter elements of the first matrix:
1 2 3
4 5 6
Enter elements of the second matrix:
7 8
9 10
11 12
Product of matrices:
58 64
139 154
```



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4. Program to calculate the row sum and column sum of a matrix

cpp

Copy code

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

int main() {
    int rows, cols;
    cout << "Enter number of rows and columns: ";
    cin >> rows >> cols;
    int matrix[rows][cols];

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

    // Calculating row sums
    cout << "Row sums:" << endl;
    for (int i = 0; i < rows; ++i) {
        int sum = 0;
        for (int j = 0; j < cols; ++j)
            sum += matrix[i][j];
        cout << "Sum of row " << i + 1 << ": " << sum << endl;
    }

    // Calculating column sums
    cout << "Column sums:" << endl;
    for (int j = 0; j < cols; ++j) {
        int sum = 0;
        for (int i = 0; i < rows; ++i)
            sum += matrix[i][j];
        cout << "Sum of column " << j + 1 << ": " << sum << endl;
    }

    return 0;
}
```



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Sample Input/Output:

mathematica

Copy code


```
Enter number of rows and columns: 2 3
Enter elements of the matrix:
1 2 3
4 5 6
Row sums:
Sum of row 1: 6
Sum of row 2: 15
Column sums:
Sum of column 1: 5
Sum of column 2: 7
Sum of column 3: 9
```


These programs cover basic matrix operations in C++ and demonstrate the use of `cin` and `cout` for input and output. Let me know if you need further explanations or modifications!

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