

Fundamentals of programming

Home task 9

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SECTION	A

HOME TASK 9

```
#include<iostream>
using namespace std;
double determinant(double mat[3][3]) {
    return mat[0][0] * (mat[1][1] * mat[2][2] - mat[2][1] * mat[1][2]) -
           mat[0][1] * (mat[1][0] * mat[2][2] - mat[2][0] * mat[1][2]) +
           mat[0][2] * (mat[1][0] * mat[2][1] - mat[2][0] * mat[1][1]);
}
void inverseMatrix(double mat[3][3], double inv[3][3]) {

    double det = determinant(mat);
    if (det == 0) {
        cout << "Matrix is singular so its inverse does not exists" << endl;
        return;
    }

    inv[0][0] = (mat[1][1] * mat[2][2] - mat[2][1] * mat[1][2]) / det;
    inv[0][1] = (mat[0][2] * mat[2][1] - mat[0][1] * mat[2][2]) / det;
    inv[0][2] = (mat[0][1] * mat[1][2] - mat[0][2] * mat[1][1]) / det;
    inv[1][0] = (mat[1][2] * mat[2][0] - mat[1][0] * mat[2][2]) / det;
    inv[1][1] = (mat[0][0] * mat[2][2] - mat[0][2] * mat[2][0]) / det;
    inv[1][2] = (mat[1][0] * mat[0][2] - mat[0][0] * mat[1][2]) / det;
    inv[2][0] = (mat[1][0] * mat[2][1] - mat[2][0] * mat[1][1]) / det;
    inv[2][1] = (mat[2][0] * mat[0][1] - mat[0][0] * mat[2][1]) / det;
    inv[2][2] = (mat[0][0] * mat[1][1] - mat[1][0] * mat[0][1]) / det;
}
int main()
{

    double matrix[3][3], inverse[3][3];
    cout << "Enter values for matrix:";
    for(int i=0; i<3; i++)
    {
        for(int j=0; j<3; j++)
        {
            cin >> matrix[i][j];
        }
    }
    cout << "Inverse of matrix is:" << endl;
    inverseMatrix(matrix, inverse);
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
            cout << inverse[i][j] << " ";
        }
        cout << endl;
    }
}
```

C:\Users\arbab\Documents\TASK\home task 9 1.exe

Enter values for matrix:1

2

3

0

1

4

5

6

0

Inverse of matrix is:

-24 18 5

20 -15 -4

-5 4 1

Process exited after 12.6 seconds with return value 0

Press any key to continue . . .