HOME TASKS

```cpp
#include <bits/stdc++.h>
using namespace std;
double determinant(double matrix[3][3]) {
    return matrix[0][0] * (matrix[1][1] * matrix[2][2] - matrix[1][2] * matrix[2][1]) -
           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]);
}
void adjoint(double matrix[3][3], double adj[3][3]) {
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
            int sign = ((i + j) % 2 == 0) ? 1 : -1;
            adj[j][i] = sign * (matrix[(i + 1) % 3][(j + 1) % 3] * matrix[(i + 2) % 3][(j + 2) % 3] -
                                matrix[(i + 1) % 3][(j + 2) % 3] * matrix[(i + 2) % 3][(j + 1) % 3]);
        }
    }
}
bool inverse(double matrix[3][3], double inv[3][3]) {
    double det = determinant(matrix);
    if (det == 0) {
        cout << "Inverse cannot be calculated as the determinant is 0." << endl;
        return false;
    }
    double adj[3][3];
    adjoint(matrix, adj);
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
            inv[i][j] = adj[i][j] / det;
        }
    }
    return true;
}
int main() {
    double matrix[3][3];
    double inv[3][3];

    cout << "Enter the elements of the 3x3 matrix :-" << endl;
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
             cout << "Enter the element of the  matrix["<<i<<"]["<<j<<"] :";
            cin >> matrix[i][j];
        }
    }

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

```
Enter the elements of the 3x3 matrix :-
Enter the element of the  matrix[0][0] :5
Enter the element of the  matrix[0][1] :8
Enter the element of the  matrix[0][2] :6
Enter the element of the  matrix[1][0] :8
Enter the element of the  matrix[1][1] :4
Enter the element of the  matrix[1][2] :1
Enter the element of the  matrix[2][0] :2
Enter the element of the  matrix[2][1] :3
Enter the element of the  matrix[2][2] :5
The inverse of the matrix is:
-0.138211 -0.178862 0.130081
-0.308943 -0.105691 0.349593
-0.130081 0.00813008 0.357724

Process returned 0 (0x0)   execution time : 7.261 s
Press any key to continue.
```