#include <iostream>

#include <cmath>

using namespace std;

int main() {

float Xo = 0, Yo = 0, Zo = 0, X1, Y1, Z1, a1, a2, a3, a4, b1, b2, b3, b4, c1, c2, c3, c4, A, B, C;

int count =0, n=1;

while(n)

{

come:

cout << "Enter the values of a1, a2, a3, a4\n";

cin >> a1 >> a2 >> a3 >> a4;

cout << "Enter the values of b1, b2, b3, b4\n";

cin >> b1 >> b2 >> b3 >> b4;

cout << "Enter the values of c1, c2, c3, c4\n";

cin >> c1 >> c2 >> c3 >> c4;

n=0;

}

if ((fabs(a1) >= fabs(a2 + a3)) && (fabs(b2) >= fabs(b1 + b3)) && (fabs(c3) >= fabs(c1 + c2))) {

GaussSeidal:

X1 = (a4 - ((a2 \* Yo) + (a3 \* Zo))) / a1;

Y1 = (b4 - ((b1 \* X1) + (b3 \* Zo))) / b2;

Z1 = (c4 - ((c1 \* X1) + (c2 \* Y1))) / c3;

} else {

cout << "Enter the correct values\n";

goto come;

return 1;

}

A = fabs((X1 - Xo) / Xo);

B = fabs((Y1 - Yo) / Yo);

C = fabs((Z1 - Zo) / Zo);

if ((A <= 0.001) && (B <= 0.001) && (C <= 0.001))

{

cout << "The values of X1 = " << X1 << ", X2 = " << Y1 << ", X3 = " << Z1 << endl;

} else {

Xo = X1;

Yo = Y1;

Zo = Z1;

goto GaussSeidal;

count++;

}

cout << "The number of iterations is " << count << "\n";

return 0;

}