

Net

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 256 megabytes

You are given a convex polyhedron. Find its net.

A net of a polyhedron is an arrangement of non-overlapping edge-joined polygons in the plane which can be folded (along edges) to become the faces of the polyhedron.

Input

The first line contains a single integer N — the number of vertices of the polyhedron ($4 \leq N$).

In each of the following N lines, there are three integers x_i, y_i, z_i — the coordinates of the vertices of the polyhedron ($-100 \leq x_i, y_i, z_i \leq 100$).

It is guaranteed that no four points lie on the same plane. It is guaranteed that the number of faces of the polyhedron does not exceed 20. It is guaranteed that a net exists.

Output

In the first line, output the number of vertices in the net M .

In each of the following M lines, output three numbers — the index of the corresponding vertex of the polyhedron (numbered from 1) and the coordinates in the order of traversal. The coordinates must be printed with at least 12 decimal places, and they must not exceed 10^6 in absolute value.

If multiple valid outputs exist, you may print any of them. A mirrored net may also be an acceptable output.

Examples

standard input	standard output
4 0 0 0 1 0 0 0 1 0 0 0 1	6 3 0.0000000000000000 0.0000000000000000 1 1.0000000000000000 0.0000000000000000 4 2.0000000000000000 0.0000000000000000 1 2.866025403784438 0.5000000000000000 3 2.366025403784438 1.366025403784438 2 1.0000000000000000 1.0000000000000000
5 0 1 0 2 0 0 0 0 3 3 4 5 4 5 3	8 1 0.0000000000000000 0.0000000000000000 4 -6.5269924715350 -0.6311650152892 5 -6.1481704595758 1.7888543819998 4 -6.1636910319861 4.2382949531981 2 0.0000000000000000 2.2360679774998 4 5.8022851187880 5.1228460085045 3 3.1304951684997 0.4472135955000 4 4.5129010182472 -4.7574913977330

Note

The net from the first example is illustrated in a picture below.

