
Statues**X16795_en**

Michelangelo wants to bring some order to his tool shed and decides to order his statues by size. Each statue approximates a cuboid (the 3D equivalent of a rectangle) described by the dimension of each side. The size of a statue is equal to the volume of the corresponding cuboid.

Input

The input consists of several test cases. Each test case consists of a number N of statues such that $2 \leq N \leq 1000$, followed by N lines describing the statues. Each statue is described as id, x, y, z where id is an integer identifier and (x, y, z) is the dimensions of the cuboid, satisfying $1 \leq x, y, z \leq 1000$.

Output

For each test case, output the identifiers of the statues in order of increasing size. In case the size is equal, print the identifiers in increasing order. Print a blank line between each test case.

Sample input 1

```
3
1 1 2 3
2 3 2 1
3 1 1 2
```

Sample output 1

```
3
1
2
```

Sample input 2

```
3
4 2 4 6
8 5 4 3
12 7 4 1
3
300 100 100 100
200 1000 100 10
100 10 100 1000
```

Sample output 2

```
12
4
8
100
200
300
```

Problem information

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