E. Sourav and Coffee Machine

Time limit : 1 sec
Memory Limit : 256 MB

Problem Statement

Sourav needs coffee very often but he can't afford to go to coffee shop each time. So he decided to make a coffee machine. Coffee machine is very complex with lots of gears in it. Sourav has smoothly assembled the gears and now he wants you to check it before running it. Decide whether the coffee machine will run or not.

Gears in coffee machines are assembled in XY plane. i^{th} gear has center (x_i, y_i) and radius r_i. If gear A of radius r is in contact with gear B of radius $2r$, then 2 clockwise rotations of gear A will produce 1 anticlockwise rotation of gear B. Number of teeth on each gears are sufficiently large such that any two gears which are perfectly in contact with each other, can move smoothly. Power supply is given to the first gear i.e. first gear is the input and last gear is the output gear.

Input

The first line of input contains a single positive integer n where $2 \leq n \leq 1000$, the total number of gears. Following this will be n lines, one per gear, containing three space-separated integers x_i, y_i and r_i where $-10000 \leq x_i, y_i \leq 10000, 1 \leq r_i \leq 10000$, indicating the center coordinate and the radius of the ith gear. It is guaranteed that the gears do not overlap with each other.

Output

If the input gear cannot move, print, on a single line, "The input gear cannot move." (without the quotation marks). If the input gear can move but is not connected to the output gear, print, on a single line, "The input gear is not connected to the output gear." (without the quotation marks). Otherwise, print, on a single line, the ratio the output gear rotates with respect to the input gear in the form of "a:b" (without the quotation marks), in reduced form i.e. gcd(a, b) is 1. If the output gear rotates in the opposite direction as the input gear, write the ratio as a negative ratio. For example, if the output gear rotates clockwise three times as the input gear rotates counterclockwise twice, the output should be -3:2.

Sample Input

```
3
0 0 100
200 0 100
400 0 100
```

Sample output

```
1:1
```

Sample Input

```
16
10 10 5
20 10 5
30 10 5
40 10 5
```

```
10 20 5
20 20 5
30 20 5
40 20 5
10 30 5
20 30 5
30 30 5
40 30 5
10 40 5
20 40 5
30 40 5
40 40 5
```

Sample output

1:1

Sample input

```
3
0 0 1
0 3 2
4 0 3
```

Sample output

The input gear cannot move.