Bloomberg CODECON

Memory Limit: 1024 MB
Time Limit: 5 s

Asteroids (300 points)

Introduction

You and your team are on a spaceship en route to Neptune, and are currently approaching the asteroid belt between Mars and Jupiter. The trip is very long, so in order to preserve fuel, your captain wants to try to fly directly towards Neptune's orbit, without making any turns or changing speed.

With this route planned, just how close will your spaceship get to these asteroids?

Let us assume that your spaceship and each asteroid moves in a straight line at constant velocity. Additionally, let us represent the location of your spaceship and the asteriods in 3-dimensional space.

Input Specifications

- The first line of input will contain an integer **N**, the number of asteroids in the section of the belt you are passing through.
  - **$1 \le N \le 500$**
- The next **N** lines will be of the form $X_i\ Y_i\ Z_i\ A_i\ B_i\ C_i$, where (X_i,Y_i,Z_i) is the position of the **i**th asteroid at time **t=0**, and (A_i,B_i,C_i) is the velocity of the asteroid in each of the three dimensions.
  - **$-1000 \le X_i, Y_i, Z_i, A_i, B_i, C_i \le 1000$**
- The last line will be of the form $X_s\ Y_s\ Z_s\ A_s\ B_s\ C_s$, where (X_s,Y_s,Z_s) is the position of your spaceship at time **t=0**, and (A_s,B_s,C_s) is the velocity of your spaceship in each of the three dimensions.
  - **$-1000 \le X_s, Y_s, Z_s, A_s, B_s, C_s \le 1000$**

Output Specifications

- On a single line, print $D_{min}\ t_{min}$ (space separated, rounded to 6 decimals places), where D_{min} is the minimum distance between the spaceship and the average position of all **N** asteroids, and t_{min} is the earliest time at which this distance is D_{min}.

Sample Input/Output

Input

```
6
0 0 0 1 0 0
0 0 0 -1 0 0
0 0 0 0 1 0
0 0 0 0 -1 0
0 0 0 0 0 1
0 0 0 0 0 -1
```

```
-1 -1 0 10 0 0
```

Output

```
1.000000 0.100000
```

Explanation

In this example, the average position of the asteroids is closest to your spaceship at t = 0.1. At this time, the average position of the asteroids is (0,0,0) and your spaceship is at (0,-1,0), so the minimal distance is 1.0.