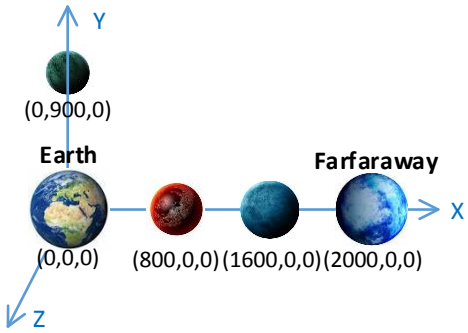
28 Family dinner in Farfaraway

14 points

Introduction

We are planning a trip with our brand new spaceship to visit our cousins in a planet named Farfaraway. The engine is fueled with high pressure radioactive gas and it allows us to go as far as 1000 light-years before refueling again.



While 1000 light-years is a significant distance, we can further extend this range by making stops in safe planets with gas stations. Our Micheleen guide contains a list with all such planets where we may stop for refueling.

Our guide indicates the 3D orthogonal coordinates (x,y,z) for each planet expressed in light-years. The Earth is always located at coordinates (0,0,0).

The distance between 2 points *p* and *q* in the 3D space is computed with the following formula:

$$distance = \sqrt{(q_x - p_x)^2 + (q_y - p_y)^2 + (q_z - p_z)^2}$$

Input

The program will receive the following information:

- The first line indicates the 3D coordinates of the Farfaraway planet separated by spaces.
- The second line indicates the number of additional planets (up to 50) where we may stop for refueling. For each additional planet, we will have a line in the input with their 3D coordinates separated by spaces.

```
2000 0 0
3
0 900 0
1600 0 0
800 0 0
```

Output

We need you to code a program that indicates whether it is possible to travel from the Earth to Farfaraway with the spaceship. The output will consist of one line indicating "`yes`" if it is possible to reach Farfaraway with any required refueling stops, or "`no`" otherwise.

```
Yes
```