C Coherency

Time limit: 8s



The miniatures are typically hand-painted by the players.

It is the 25th of March, 40025 CE in the world of *Battle Axe Player Clash 40,000* (BAPC40K). This futuristic table-top miniatures wargame is played with endearing figurines called *models*, each of which is placed on a circular *base*. The models are placed on a 100 km × 100 km gaming board. A collection of such models forms a *coherent unit* if between any pair of models there is an unbroken chain of models that have a Euclidean distance of at most two inches[1] between the edges of their bases. Moreover, if the unit contains seven models or more, each model must be within two inches of at least *two* other models. Given the positions of a collection of models with varying base diameters, determine whether they form a single coherent unit.

One can prove that for any valid input for this problem, if the diameters of the circular bases differ from the given diameter by at most 10^{-5} mm, the coherency of a unit of models does not change.

Input

The input consists of:

- One line with an integer n ($2 \leq n \leq 2 \cdot 10^5$), the number of models.
- n lines, each with three integers x, y, and d ($0 \leq x, y \leq 10^8$, $d \in \{25, 28, 32, 40, 50, 65, 80, 90, 100, 130, 160\}$), describing a model that has its center coordinates at (x, y) and a base diameter of d, all given in millimeters.

Each model (including the base) fits on the gaming board.

It is guaranteed that no two models are overlapping, but the models can touch.

Output

If the n models form a single coherent unit, output "`yes`". Otherwise, output "`no`".

Sample Input 1	Sample Output 1
2 13 13 25 88 13 25	yes

Sample Input 2	Sample Output 2
2 13 13 25 89 13 25	no

[1] Recall that an inch equals 25.4 mm.

Sample Input 3	**Sample Output 3**
7 1255 1120 65 1204 1226 160 1090 1252 65 998 1179 160 998 1061 65 1090 988 160 1204 1014 65	no

Sample Input 4	**Sample Output 4**
7 1066 910 130 1007 1032 130 875 1062 130 770 978 130 770 843 130 875 758 130 1007 788 130	yes

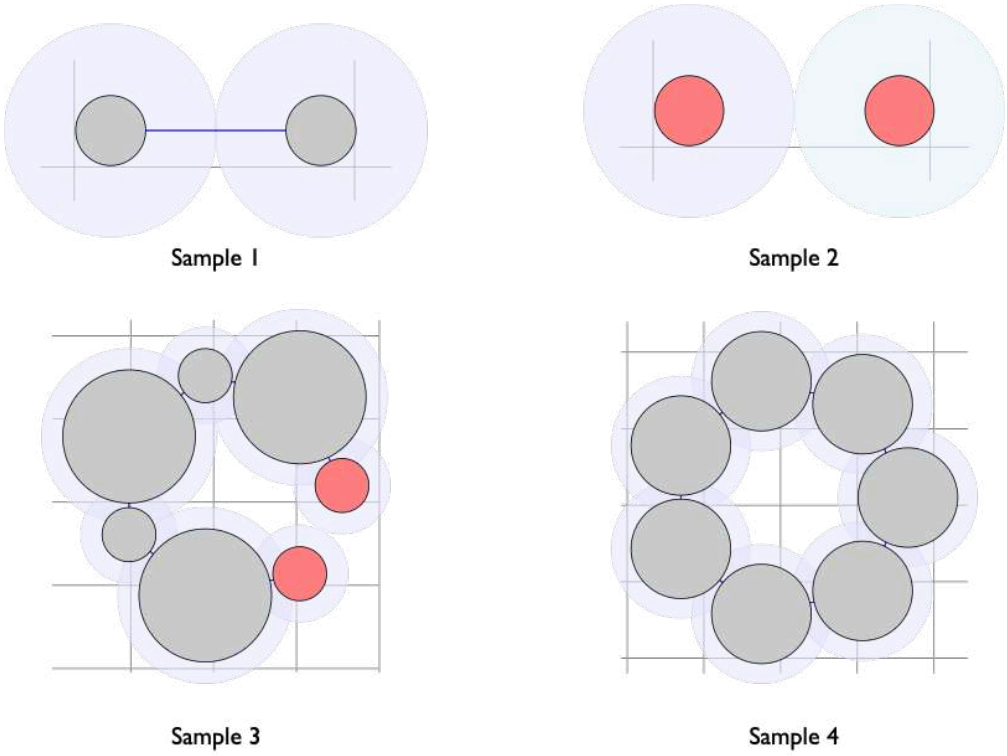


Figure C.1: Illustration of the samples. Samples 1 and 4 are coherent. Sample 2 is not coherent, because the two models are too far away. Sample 3 is not coherent, because not all models are within two inches of two other models.