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Sommersemester 2017

Week 9 – (Adv.) Competitive Programming

Abgabe 26.06.2017 17:00 Uhr, über das Judge-Interface

umbridgesrules: (100 points - 1 second timelimit)

Do you remember Dolores Umbridge? The nasty woman which tried to kick out Dumbledore? She's back! Different school, different pupils, but new more strict rules!

You may remember *Educational Decree Number Twenty-Six*, which forbades boys and girls from being within six inches of each other. Now at her new school that's not enough. She tries to enforce the rule which forbade all pupils from being within six inches of each other. But it looks like nobody cares.

She is really angry because of this and she wants to punish the pupils. Since she cannot punish all of them, she wants to make an example. Her goal is it, to punish the two most violating pupils. With some magic trick, she got all positions of all pupils and with some other magic trick, she enforces you to find the two persons with the lowest distance to each other. It's enough to give her the distance because then she can use some spell to punish these pupils.

Input The input starts with a single line n ($0 < n \leq 300000$). It's the amount of pupils in the school. Each of the following lines contains three integers: x, y, f ($0 \leq x, y < 2^{31}, 0 \leq f < 50$). x and y identifies the position of the pupil, f is the floor of the pupil. Obviously two pupils can not be at the same position on the same floor, but they can be at the same position on different floors (which is fine).

Output Please find the distance between the two pupils, which are closest to each other. Multiply the result with 100 and round it (the result should be a natural number).

Points There are three groups of test sets worth 100 points in total:

- *easy*: The first group worth 30 points. You can assume, that $x, y < 100000, f = 0$ and $n < 10000$.

- *medium*: The first group worth 30 points. You can assume, that $x, y < 100000$, $f < 10$ and $n < 100000$.
- *hard*: The first group worth 40 points. There are no addition assumptions.

Sample Input

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4
3 4 1
6 5 1
3 4 2
2 5 2
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Sample Output

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141
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