

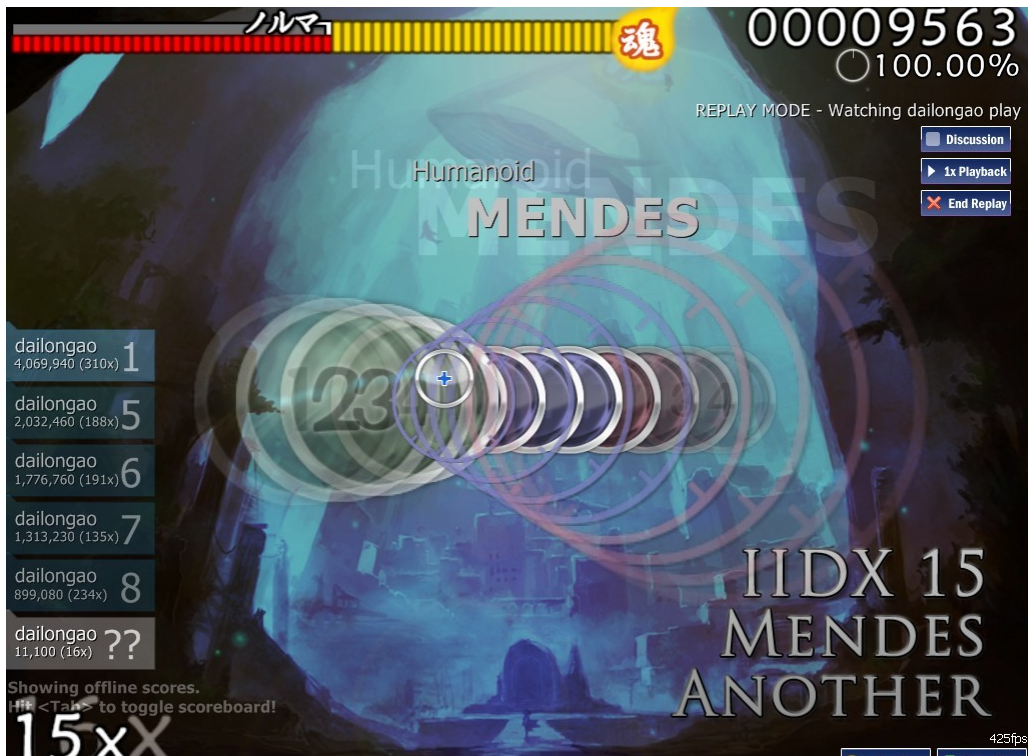
# A Song of Anniversary

Time Limit: 5 Seconds

Memory Limit: 65536 KB

Because of the 10th anniversary of ZOJ, Dai decides to write a beautiful song as the present. What's more, to let more people enjoy the anniversary, he is going to make a beatmap for the song in a famous music game - osu!.

osu! is a rhythm-clicking music game.



When you are playing *osu!*, some *notes* will appear on the screen. Each notes has a postion  $(x,y)$ . The only thing you need to do is to click them with the rhythm. So it's impossible that two notes appear at the same time - Your mouse can't divide into two parts, can it?

A beatmap is a file that stored all information of notes. After several days, Dai finished his work - He made a wonderful beatmap for the special song! However, to make the beatmap being admitted to all people, he need to calculate the difficulty of the beatmap. How to calculate the difficulty? First of all, we need to rearrange the notes by time and divide them into  $k$  consecutive parts. For example, if there are some notes appear at time 1, time 2, time 4, time 5, and  $k$  is 2, a valid dividing plan is (1,2), (4,5). Of course, (1), (2,4,5) is also valid.

And we define the distance of neighbour parts is the distance of the last note of previous part and the first note of next part. As below, the distance of (1) and (2,4,5) is the distance of note 1 and 2. Finally, the difficulty of a beatmap is the minimum distance of all distances of neighbour parts.

Dai knows that the difficulty is different if he divides the beatmap in different ways. So please tell him what's the maximum difficulty he can get.

## Input

The input contains several test cases.

For each test case, the first line is a string "[HitObjects]", which means the beginning of a test case. The second line is a number  $k$  ( $1 \leq k \leq$  the number of notes), which means the beatmap need to cut into  $k$  parts.

Then followed several lines, each line has the same formula  $[x],[y],[Time],[NewCombo],[Sound]$  ( $0 \leq x,y \leq 1000$ ,  $0 \leq Time \leq 2^{31}-1$ ,  $0 \leq NewCombo \leq 1$ ,  $0 \leq Sound \leq 100$ ). The number of notes will not exceed 100001 ( $10^5+1$ ) and all values in this formula are integers. There's no empty line between the test cases. Process to END\_OF\_FILE.

By the way, you can find informations about NewCombo and Sound here: <http://en.wikipedia.org/wiki/Osu!>.

## Output

For each test case, output a real number as the description required. The number should rounded to 3 digits after the decimal point.

## Sample Input

```
[HitObjects]
1
100,100,1,0,2
100,100,2,0,2
100,100,3,0,2
[HitObjects]
2
100,100,1,0,2
100,100,2,0,2
100,100,3,0,2
```

## Sample Output

```
0.000
0.000
```

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