

Birthday Party !!

Tatsu's got a birthday today. She invited many guests and cooked a huge (nearly infinite) birthday cake decorated by n banana circles of different sizes. Nobita's (Tatsu's younger brother) birthday is about to start in 7 minutes too, and while Tatsu is older, she decided to play the boss a little. She told Nobita to cut the cake by k straight-line cuts (the cutting lines can intersect) to divide banana circles into banana pieces.

Tatsu has many guests and she wants everyone to get at least one banana piece. That's why she told Nobita to make the total number of banana pieces maximum. It's not a problem if some banana pieces end up on the same cake piece — the key is to make the maximum number of banana pieces. Determine what result Nobita will achieve.

Input

The first line contains two integers n and k — the number of banana circles and the number of cuts Nobita should perform ($1 \leq n \leq 1000$, $1 \leq k \leq 10^5$). Next n lines contain the positions and sizes of the banana circles (all banana circles are round). On the cake the Cartesian coordinate system is defined. Each line contains three integers x , y and z — the coordinates of the center of the corresponding banana piece and its radius ($-1000 \leq x, y \leq 1000$, $1 \leq z \leq 1000$).

It is guaranteed that the banana circles do not intersect, do not touch each other and do not overlap with each other.

Output

Print the only integer — the largest number of banana pieces that Nobita can get after he performs the k straight-line cuts.

Example

Input:

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1 1
0 0 1
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Output:

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2
```

Input:

```
2 2
0 0 1
3 0 1
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Output:

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7
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