2026/2027 SOUTHERN CALIFORNIA REGIONAL INTERNATIONAL COLLEGIATE PROGRAMMING CONTEST

Problem 12
Apartment Hunting

You are hunting for a new apartment, and you need to schedule tours. The rental market is very competitive right now, so even if you tour an apartment and put in an application, there is a good chance you will not get it. Plus, many apartment tours are at the same time, and you cannot be in two places at once.

You have a list of N apartments you want to tour. For the ith apartment there is exactly one tour, which occurs in the timespan $(start_i, end_i)$. In order to put in an application and have a chance at getting the apartment, you must attend the tour for the entire timespan. You cannot tour another apartment whose timespan overlaps for a non-zero duration. However, the apartments you are touring are all very close to each other, so it takes negligible time to get from one tour to another.

Your credit and references are already good, so you only need to worry about whether your application will be approved. Fortunately, you have a really good intuition. If you apply for apartment i, you know that with probability p_i your application will be approved and you will get the apartment. The chance of getting one apartment is independent of the chance of getting any other apartment. It is okay to get more than one apartment; in that case, you will simply withdraw your extra applications.

Assuming you plan your schedule optimally, compute the probability that you will get at least one apartment.

The first line of input is an integer N, the number of apartments: $1 \leq N \leq 10^5$. Each of the next N lines is a description of the tour for each apartment. The ith line contains space-separated values $start_i$, end_i, and p_i, where $start_i$ and end_i are the integer timespan endpoints $0 \leq start_i < end_i \leq 10^9$, and p_i is a real number denoting the probability of getting the ith apartment, $0 \leq p_i \leq 1$, specified with up to 6 digits after the decimal point.

Output a line containing a single real number: the probability of getting at least one apartment with an optimal schedule. Your answer will be accepted if the absolute difference compared to the judges' reference answer does not exceed 10^{-6}.

Sample Input 1

```
4
2 4 0.5
5 7 0.75
2 6 0.25
9 10 0.25
```

Output for Sample Input 1

```
0.90625
```

Problem 12
Apartment Hunting (continued)

Sample Input 2

```
3
2 4 0.5
5 7 0.75
3 6 1.0
```

Output for Sample Input 2

```
1.0
```

Sample Input 3

```
3
1 5 0.5
4 5 0.6
5 7 0.1
```

Output for Sample Input 3

```
0.64
```