1776. Car Fleet II

Description

There are n cars traveling at different speeds in the same direction along a one-lane road. You are given an array $cars$ of length n, where $cars[i] = [position_i, speed_i]$ represents:

- $position_i$ is the distance between the i^{th} car and the beginning of the road in meters. It is guaranteed that $position_i < position_{i+1}$.
- $speed_i$ is the initial speed of the i^{th} car in meters per second.

For simplicity, cars can be considered as points moving along the number line. Two cars collide when they occupy the same position. Once a car collides with another car, they unite and form a single car fleet. The cars in the formed fleet will have the same position and the same speed, which is the initial speed of the **slowest** car in the fleet.

Return an array $answer$, where $answer[i]$ is the time, in seconds, at which the i^{th} car collides with the next car, or -1 if the car does not collide with the next car. Answers within 10^{-5} of the actual answers are accepted.

Example 1:

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Input: cars = [[1,2],[2,1],[4,3],[7,2]]
Output: [1.00000,-1.00000,3.00000,-1.00000]
Explanation: After exactly one second, the first car will collide with the second car, and form a car fleet with speed 1 m/s. After exactly 3 seconds, the third car will collide with the fourth car, and form a car fleet with speed 2 m/s.
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Example 2:

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Input: cars = [[3,4],[5,4],[6,3],[9,1]]
Output: [2.00000,1.00000,1.50000,-1.00000]
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Constraints:

- $1 <= cars.length <= 10^5$
- $1 <= position_i, speed_i <= 10^6$
- $position_i < position_{i+1}$