Problem 2303: Calculate Amount Paid in Taxes

Problem Information

Difficulty: Easy
Acceptance Rate: 68.52%
Paid Only: No
Tags: Array, Simulation

Problem Description

You are given a **0-indexed** 2D integer array `brackets` where `brackets[i] = [upperi, percenti]` means that the `ith` tax bracket has an upper bound of `upperi` and is taxed at a rate of `percenti`. The brackets are **sorted** by upper bound (i.e. `upperi-1 < upperi` for `0 < i < brackets.length`).

Tax is calculated as follows:

* The first `upper0` dollars earned are taxed at a rate of `percent0`. * The next `upper1 - upper0` dollars earned are taxed at a rate of `percent1`. * The next `upper2 - upper1` dollars earned are taxed at a rate of `percent2`. * And so on.

You are given an integer `income` representing the amount of money you earned. Return _the amount of money that you have to pay in taxes._ Answers within `10-5` of the actual answer will be accepted.

Example 1:

Input: brackets = [[3,50],[7,10],[12,25]], income = 10 **Output:** 2.65000 **Explanation:** Based on your income, you have 3 dollars in the 1st tax bracket, 4 dollars in the 2nd tax bracket, and 3 dollars in the 3rd tax bracket. The tax rate for the three tax brackets is 50%, 10%, and 25%, respectively. In total, you pay $3 * 50% + $4 * 10% + $3 * 25% = $2.65 in taxes.

Example 2:

Input: brackets = [[1,0],[4,25],[5,50]], income = 2 **Output:** 0.25000 **Explanation:** Based on your income, you have 1 dollar in the 1st tax bracket and 1 dollar in the 2nd tax bracket. The tax rate for the two tax brackets is 0% and 25%, respectively. In total, you pay $1 * 0% + $1 * 25% = $0.25 in taxes.

Example 3:

Input: brackets = [[2,50]], income = 0 **Output:** 0.00000 **Explanation:** You have no income to tax, so you have to pay a total of $0 in taxes.

Constraints:

* `1 <= brackets.length <= 100` * `1 <= upperi <= 1000` * `0 <= percenti <= 100` * `0 <= income <= 1000` * `upperi` is sorted in ascending order. * All the values of `upperi` are **unique**. * The upper bound of the last tax bracket is greater than or equal to `income`.

Code Snippets

C++:

```
class Solution {
public:
double calculateTax(vector<vector<int>>& brackets, int income) {

}
};
```

Java:

```
class Solution {
public double calculateTax(int[][] brackets, int income) {

}
}
```

Python3:

```
class Solution:
def calculateTax(self, brackets: List[List[int]], income: int) -> float:
```