Problem 1792: Maximum Average Pass Ratio

Problem Information

Difficulty: Medium
Acceptance Rate: 74.12%
Paid Only: No
Tags: Array, Greedy, Heap (Priority Queue)

Problem Description

There is a school that has classes of students and each class will be having a final exam. You are given a 2D integer array `classes`, where `classes[i] = [passi, totali]`. You know beforehand that in the `ith` class, there are `totali` total students, but only `passi` number of students will pass the exam.

You are also given an integer `extraStudents`. There are another `extraStudents` brilliant students that are **guaranteed** to pass the exam of any class they are assigned to. You want to assign each of the `extraStudents` students to a class in a way that **maximizes** the **average** pass ratio across **all** the classes.

The **pass ratio** of a class is equal to the number of students of the class that will pass the exam divided by the total number of students of the class. The **average pass ratio** is the sum of pass ratios of all the classes divided by the number of the classes.

Return _the**maximum** possible average pass ratio after assigning the _`extraStudents` _students._ Answers within `10-5` of the actual answer will be accepted.

Example 1:

Input: classes = [[1,2],[3,5],[2,2]], extraStudents = 2 **Output:** 0.78333 **Explanation:** You can assign the two extra students to the first class. The average pass ratio will be equal to (3/4 + 3/5 + 2/2) / 3 = 0.78333.

Example 2:

Input: classes = [[2,4],[3,9],[4,5],[2,10]], extraStudents = 4 **Output:** 0.53485

Constraints:

* `1 <= classes.length <= 105` * `classes[i].length == 2` * `1 <= passi <= totali <= 105` * `1 <= extraStudents <= 105`

Code Snippets

C++:

```
class Solution {
public:
double maxAverageRatio(vector<vector<int>>& classes, int extraStudents) {

}
};
```

Java:

```
class Solution {
public double maxAverageRatio(int[][] classes, int extraStudents) {

}
}
```

Python3:

```
class Solution:
def maxAverageRatio(self, classes: List[List[int]], extraStudents: int) ->
float:
```