Problem 2280: Minimum Lines to Represent a Line Chart

Problem Information

Difficulty: Medium
Acceptance Rate: 26.55%
Paid Only: No
Tags: Array, Math, Geometry, Sorting, Number Theory

Problem Description

You are given a 2D integer array `stockPrices` where `stockPrices[i] = [dayi, pricei]` indicates the price of the stock on day `dayi` is `pricei`. A **line chart** is created from the array by plotting the points on an XY plane with the X-axis representing the day and the Y-axis representing the price and connecting adjacent points. One such example is shown below:

Return _the**minimum number of lines** needed to represent the line chart_.

Example 1:

Input: stockPrices = [[1,7],[2,6],[3,5],[4,4],[5,4],[6,3],[7,2],[8,1]] **Output:** 3
Explanation: The diagram above represents the input, with the X-axis representing the day and Y-axis representing the price. The following 3 lines can be drawn to represent the line chart: - Line 1 (in red) from (1,7) to (4,4) passing through (1,7), (2,6), (3,5), and (4,4). - Line 2 (in blue) from (4,4) to (5,4). - Line 3 (in green) from (5,4) to (8,1) passing through (5,4), (6,3), (7,2), and (8,1). It can be shown that it is not possible to represent the line chart using less than 3 lines.

Example 2:

Input: stockPrices = [[3,4],[1,2],[7,8],[2,3]] **Output:** 1 **Explanation:** As shown in the diagram above, the line chart can be represented with a single line.

Constraints:

* `1 <= stockPrices.length <= 105` * `stockPrices[i].length == 2` * `1 <= dayi, pricei <= 109` * All `dayi` are **distinct**.

Code Snippets

C++:

```
class Solution {
public:
int minimumLines(vector<vector<int>>& stockPrices) {

}
};
```

Java:

```
class Solution {
public int minimumLines(int[][] stockPrices) {

}
}
```

Python3:

```
class Solution:
def minimumLines(self, stockPrices: List[List[int]]) -> int:
```