Problem 2249: Count Lattice Points Inside a Circle

Problem Information

Difficulty: Medium
Acceptance Rate: 56.07%
Paid Only: No
Tags: Array, Hash Table, Math, Geometry, Enumeration

Problem Description

Given a 2D integer array `circles` where `circles[i] = [xi, yi, ri]` represents the center `(xi, yi)` and radius `ri` of the `ith` circle drawn on a grid, return _the**number of lattice points** __that are present inside**at least one** circle_.

Note:

* A **lattice point** is a point with integer coordinates. * Points that lie **on the circumference of a circle** are also considered to be inside it.

Example 1:

Input: circles = [[2,2,1]] **Output:** 5 **Explanation:** The figure above shows the given circle. The lattice points present inside the circle are (1, 2), (2, 1), (2, 2), (2, 3), and (3, 2) and are shown in green. Other points such as (1, 1) and (1, 3), which are shown in red, are not considered inside the circle. Hence, the number of lattice points present inside at least one circle is 5.

Example 2:

Input: circles = [[2,2,2],[3,4,1]] **Output:** 16 **Explanation:** The figure above shows the given circles. There are exactly 16 lattice points which are present inside at least one circle.

Some of them are (0, 2), (2, 0), (2, 4), (3, 2), and (4, 4).

Constraints:

* `1 <= circles.length <= 200` * `circles[i].length == 3` * `1 <= xi, yi <= 100` * `1 <= ri <= min(xi, yi)`

Code Snippets

C++:

```
class Solution {
public:
    int countLatticePoints(vector<vector<int>>& circles) {


    }
};
```

Java:

```
class Solution {
    public int countLatticePoints(int[][] circles) {


    }
}
```

Python3:

```
class Solution:
    def countLatticePoints(self, circles: List[List[int]]) -> int:
```