

# Problem 2021: Brightest Position on Street

## Problem Information

**Difficulty:** Medium

**Acceptance Rate:** 60.55%

**Paid Only:** Yes

**Tags:** Array, Sorting, Prefix Sum, Ordered Set

## Problem Description

A perfectly straight street is represented by a number line. The street has street lamp(s) on it and is represented by a 2D integer array `lights`. Each `lights[i] = [positioni, rangei]` indicates that there is a street lamp at position `positioni` that lights up the area from `[positioni - rangei, positioni + rangei]` (\*\*inclusive\*\*).

The \*\*brightness\*\* of a position `p` is defined as the number of street lamp that light up the position `p`.

Given `lights`, return \_the\*\*brightest\*\* position on the\_ \_street. If there are multiple brightest positions, return the\*\*smallest\*\* one.\_

**Example 1:**



**Input:** lights = `[-3,2],[1,2],[3,3]` **Output:** `-1` **Explanation:** The first street lamp lights up the area from  $[-3] - 2, [-3] + 2] = [-5, -1]$ . The second street lamp lights up the area from  $[1 - 2, 1 + 2] = [-1, 3]$ . The third street lamp lights up the area from  $[3 - 3, 3 + 3] = [0, 6]$ . Position `-1` has a brightness of 2, illuminated by the first and second street light. Positions `0, 1, 2`, and `3` have a brightness of 2, illuminated by the second and third street light. Out of all these positions, `-1` is the smallest, so return it.

**Example 2:**

**Input:** lights = `[1,0],[0,1]` **Output:** `1` **Explanation:** The first street lamp lights up the area from  $[1 - 0, 1 + 0] = [1, 1]$ . The second street lamp lights up the area from  $[0 - 1, 0 + 1] =$

$[-1, 1]$ . Position 1 has a brightness of 2, illuminated by the first and second street light. Return 1 because it is the brightest position on the street.

**Example 3:**

**Input:** lights = [[1,2]] **Output:** -1 **Explanation:** The first street lamp lights up the area from  $[1 - 2, 1 + 2] = [-1, 3]$ . Positions -1, 0, 1, 2, and 3 have a brightness of 1, illuminated by the first street light. Out of all these positions, -1 is the smallest, so return it.

**Constraints:**

```
* `1 <= lights.length <= 105` * `lights[i].length == 2` * `-108 <= positioni <= 108` * `0 <= rangei <= 108`
```

## Code Snippets

**C++:**

```
class Solution {
public:
    int brightestPosition(vector<vector<int>>& lights) {
        }
};
```

**Java:**

```
class Solution {
public int brightestPosition(int[][] lights) {
        }
}
```

**Python3:**

```
class Solution:
    def brightestPosition(self, lights: List[List[int]]) -> int:
```