

Problem 1847: Closest Room

Problem Information

Difficulty: Hard

Acceptance Rate: 40.68%

Paid Only: No

Tags: Array, Binary Search, Sorting, Ordered Set

Problem Description

There is a hotel with `n` rooms. The rooms are represented by a 2D integer array `rooms` where `rooms[i] = [roomldi, sizei]` denotes that there is a room with room number `roomldi` and size equal to `sizei`. Each `roomldi` is guaranteed to be **unique**.

You are also given `k` queries in a 2D array `queries` where `queries[j] = [preferredj, minSizej]`. The answer to the `jth` query is the room number `id` of a room such that:

* The room has a size of **at least** `minSizej` , and * `abs(id - preferredj)` is **minimized** , where `abs(x)` is the absolute value of `x` .

If there is a **tie** in the absolute difference, then use the room with the **smallest** such `id` .
If there is **no such room** , the answer is `-1` .

Return _an array_ `answer` _of length_ `k` _where_ `answer[j]` _contains the answer to the_ `jth` _query_.

Example 1:

Input: rooms = [[2,2],[1,2],[3,2]], queries = [[3,1],[3,3],[5,2]] **Output:** [3,-1,3]

Explanation: The answers to the queries are as follows: Query = [3,1]: Room number 3 is the closest as $\text{abs}(3 - 3) = 0$, and its size of 2 is at least 1. The answer is 3. Query = [3,3]: There are no rooms with a size of at least 3, so the answer is -1. Query = [5,2]: Room number 3 is the closest as $\text{abs}(3 - 5) = 2$, and its size of 2 is at least 2. The answer is 3.

Example 2:

****Input:**** rooms = [[1,4],[2,3],[3,5],[4,1],[5,2]], queries = [[2,3],[2,4],[2,5]] ****Output:**** [2,1,3]
****Explanation:**** The answers to the queries are as follows: Query = [2,3]: Room number 2 is the closest as $\text{abs}(2 - 2) = 0$, and its size of 3 is at least 3. The answer is 2. Query = [2,4]: Room numbers 1 and 3 both have sizes of at least 4. The answer is 1 since it is smaller. Query = [2,5]: Room number 3 is the only room with a size of at least 5. The answer is 3.

****Constraints:****

```
* `n == rooms.length` * `1 <= n <= 105` * `k == queries.length` * `1 <= k <= 104` * `1 <= roomIdi, preferredj <= 107` * `1 <= sizei, minSizej <= 107`
```

Code Snippets

C++:

```
class Solution {
public:
    vector<int> closestRoom(vector<vector<int>>& rooms, vector<vector<int>>& queries) {
        ...
    };
}
```

Java:

```
class Solution {
    public int[] closestRoom(int[][] rooms, int[][] queries) {
        ...
    }
}
```

Python3:

```
class Solution:
    def closestRoom(self, rooms: List[List[int]], queries: List[List[int]]) ->
        List[int]:
```