

# 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] = [roomId, sizei]` denotes that there is a room with room number `roomId` and size equal to `sizei`. Each `roomId` is guaranteed to be **unique**.

You are also given  $k$  queries in a 2D array `queries` where `queries[j] = [preferred, minSizej]`. The answer to the  $j$ th 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  $j$ th 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]:
```