Problem 363: Max Sum of Rectangle No Larger Than K

Problem Information

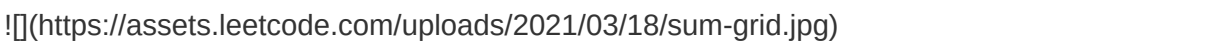
Difficulty: Hard
Acceptance Rate: 45.09%
Paid Only: No
Tags: Array, Binary Search, Matrix, Prefix Sum, Ordered Set

Problem Description

Given an `m x n` matrix `matrix` and an integer `k`, return _the max sum of a rectangle in the matrix such that its sum is no larger than_ `k`.

It is **guaranteed** that there will be a rectangle with a sum no larger than `k`.

Example 1:



Input: matrix = [[1,0,1],[0,-2,3]], k = 2 **Output:** 2 **Explanation:** Because the sum of the blue rectangle [[0, 1], [-2, 3]] is 2, and 2 is the max number no larger than k (k = 2).

Example 2:

Input: matrix = [[2,2,-1]], k = 3 **Output:** 3

Constraints:

* `m == matrix.length` * `n == matrix[i].length` * `1 <= m, n <= 100` * `-100 <= matrix[i][j] <= 100` * `-105 <= k <= 105`

Follow up: What if the number of rows is much larger than the number of columns?

Code Snippets

C++:

```
class Solution {
public:
int maxSumSubmatrix(vector<vector<int>>& matrix, int k) {

}
};
```

Java:

```
class Solution {
public int maxSumSubmatrix(int[][] matrix, int k) {

}
}
```

Python3:

```
class Solution:
def maxSumSubmatrix(self, matrix: List[List[int]], k: int) -> int:
```