

Search a 2D Matrix

You are given an $m \times n$ integer matrix `matrix` with the following two properties:

- Each row is sorted in non-decreasing order.
- The first integer of each row is greater than the last integer of the previous row.

Given an integer `target`, return `true` *if target is in matrix* or `false` *otherwise*.

You must write a solution in $O(\log(m * n))$ time complexity.

Example 1:

1	3	5	7
10	11	16	20
23	30	34	60

Input: `matrix = [[1,3,5,7],[10,11,16,20],[23,30,34,60]]`, `target = 3`

Output: `true`

Example 2:

1	3	5	7
10	11	16	20
23	30	34	60

Input: matrix = [[1,3,5,7],[10,11,16,20],[23,30,34,60]], target = 13

Output: false

Constraints:

- $m == \text{matrix.length}$
- $n == \text{matrix}[i].\text{length}$
- $1 \leq m, n \leq 100$
- $-10^4 \leq \text{matrix}[i][j], \text{target} \leq 10^4$