

12371 - LAB 08

Instructions

1. Access the auto-grader at <https://c200.luddy.indiana.edu>
2. Please write the code for the problems in python language
3. The code should be readable with variables named meaningfully
4. Plagiarism is unacceptable and we have ways to find it, so do not do it
5. Don't change the function signature (name of the function and number and types of arguments) provided in this file.
6. Once you pass all the tests on the auto grader, show your work to the teaching assistant

Problem

Question

Given an $n \times n$ matrix where each of the rows is sorted in ascending order, return the k th smallest element in the matrix.

Note that it is the k th smallest element in the sorted order, not the k th distinct element.

You must find a solution with a time complexity better than $O(n^2)$.

Test cases

Example 1:

Input: matrix = `[[1,5,9],[10,11,13],[12,13,15]]`, $k = 8$

Output: 13

Explanation: The elements in the matrix are `[1,5,9,10,11,12,13,13,15]`, and the 8th smallest number is 13

Example 2:

Input: matrix = `[[-5]]`, $k = 1$

Output: -5

Function signature

```
def kthSmallest(matrix, k):  
    # Your implementation here
```