LAB 3 Practice Question (Online Lab)

Duration: 4:00pm to 8:00pm

Q1. You are given an m x n integer matrix with the following two properties:

Property 1: Each row is sorted in increasing order.
Property 2: The first integer of each row is greater than the last integer of the previous row.

Ex:

1	2	3
4	5	6
7	8	9

Property1: Each row is sorted
Propert2: last element of row1 = 3
The first element of row2 = 4
3<4 always

Given a *2-D Array/Matrix/Vector* & *integer* ***k***,
if **k is present** in the matrix, return **true**; otherwise, return false.
Write code in **O(log(m * n))** time complexity. Here, the matrix is of size m*n

Test Case1:
Input: Matrix = {{1,2,3},{4,5,6},{7,8,9}} & k=5
Output: True

Test Case2:
Input: Matrix ={{1,2,3},{4,5,6},{7,8,9}} & k=4
Output: True

Test Case3:
Input: Matrix = {{1,2,3},{4,5,6},{7,8,9}} & k=10
Output: False

Test Case4:
Input: Matrix ={{1,3,5},{7,10,11},{16,20,23},{30,34,60}} & k=10
Output: True

Note: You can take hard-coded input in main() if you require
Hint: Sort + Searching → Binary Search
The question is easy-medium; please try to do it independently.
Today's lab is Non-evaluative