489. Kth Smallest Instructions

Difficulty : Hard

https://leetcode.com/problems/kth-smallest-instructions

Bob is standing at cell `(0, 0)`, and he wants to reach `destination`: `(row, column)`. He can only travel **right** and **down**. You are going to help Bob by providing **instructions** for him to reach `destination`.

The **instructions** are represented as a string, where each character is either:

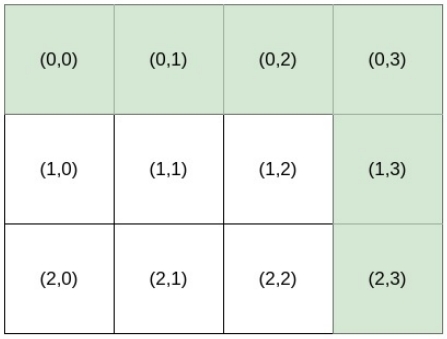
- `'H'`, meaning move horizontally (go **right**), or
- `'V'`, meaning move vertically (go **down**).

Multiple **instructions** will lead Bob to `destination`. For example, if `destination` is `(2, 3)`, both `"HHHVV"` and `"HVHVH"` are valid **instructions**.

However, Bob is very picky. Bob has a lucky number `k`, and he wants the `k`th **lexicographically smallest instructions** that will lead him to `destination`. `k` is **1-indexed**.

Given an integer array `destination` and an integer `k`, return *the* `k`th ***lexicographically smallest instructions*** *that will take Bob to* `destination`.

Example 1:

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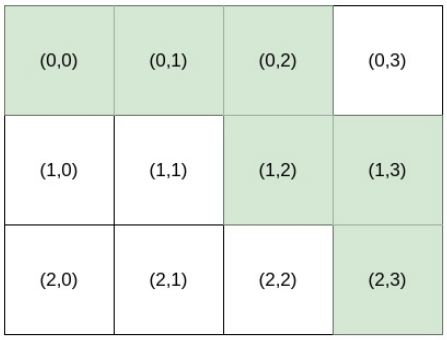
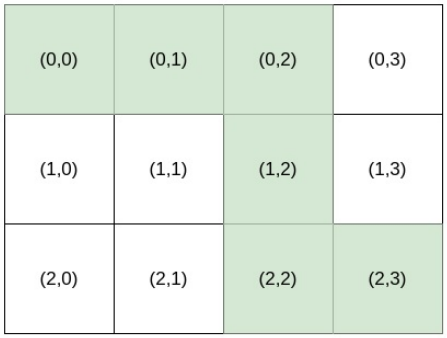
Input: destination = [2,3], k = 1
Output: "HHHVV"
Explanation: All the instructions that reach (2, 3) in lexicographic order are as follows:
["HHHVV", "HHVHV", "HHVVH", "HVHHV", "HVHVH", "HVVHH", "VHHHV", "VHHVH", "VHVHH", "VVHHH"].
```

Example 2:




```
Input: destination = [2,3], k = 2
Output: "HHVHV"
```

Example 3:



Input: `destination = [2,3], k = 3`
Output: `"HHVVH"`

Constraints:

- `destination.length == 2`
- `1 <= row, column <= 15`
- `1 <= k <= nCr(row + column, row)`, where `nCr(a, b)` denotes `a` choose `b`â€‹â€‹â€‹â€‹â€‹.