8593 - LAB 03

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

In the enchanted forest, there is a row of unique mushrooms, each with a distinct height. The forest is said to be inhabited by magical creatures, and you want to place observation crystals on some of the mushrooms to monitor the creatures. The catch is that a crystal can only observe the mushroom its placed on, and also the mushrooms to its right that are shorter than the mushroom its placed on.

Given the heights of the mushrooms in the forest, your task is to find the indices of the mushrooms where you should place observation crystals to cover the entire forest with as few crystals as possible.

Test cases

1. `Input: [3,2,5,4,1]`
   `Output: [0,2]`
   `Explanation: A crystal placed on index 0 (value = 3) can monitor the mushrooms of height 3 and 2, but cannot monitor a mushroom of height 5. Thus, we also place a crystal at index 2 (value = 5) and that crystal can monitor all the mushrooms to its right.`

2. `Input: [7,1,2,3]`
   `Output: [0]`

Function signature

```
def place_crystals(mushroom_heights):
   *** your logic***
   return crystal_positions
```

`NOTE: crystal_positions should be an array of list indices`