Assignment: Finding Visible Buildings

January 2024 CSE 106 Online C1-C2

Time: 30 minutes

Objective

In this assignment, you are required to determine which buildings are visible when looking from the right to the left. You will solve this problem using the stack data structure.

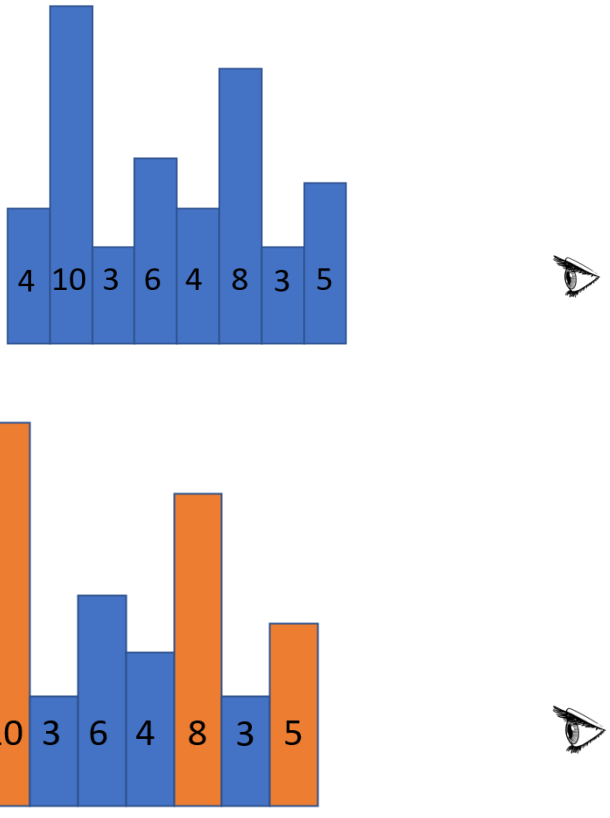
Problem Description

Consider a row of buildings where the height of each building is provided as an array. Your task is to determine which buildings will be visible when viewed from the right to the left, considering that a taller building blocks the view of any shorter building behind it.

You are required to output the buildings that are visible when looking from the right side.

Example

Below is an illustration of the buildings:



In the example above, buildings are listed by their heights. You are looking from the right side (the eye on the right) and need to determine which buildings will be visible. In the example, buildings with heights 5, 8, 10 will be visible.

Sample Input

```
4
8
4 10 3 6 4 8 3 5
6
8 2 5 5 3 1
3
5 5 5
1
10
```

Sample Output

```
-------------Testing Visible Buildings-------------
Test Case 1:
Visible buildings: 5 8 10
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Test Case 2:
Visible buildings: 1 3 5 8
--------------------
Test Case 3:
Visible buildings: 5
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Test Case 4:
Visible buildings: 10
--------------------
```

Requirements

- You need to implement the solution using only stack data structure and stack related operations e.g. push, pop and top. You are not allowed to use any array apart from the input array.
- Use both implementations (**StackArray.h** and **StackLinkedList.h**) to solve the problem. You have been given a skeleton code **online_c1c2.cpp** where you need to include the corresponding header files and implement the **findVisibleBuildings** function. You do not have to worry about output formatting. The skeleton will do that for you. Inputs will be in `input.txt` and outputs will be in `output.txt`.