2096. Step-By-Step Directions From a Binary Tree Node to Another

Description

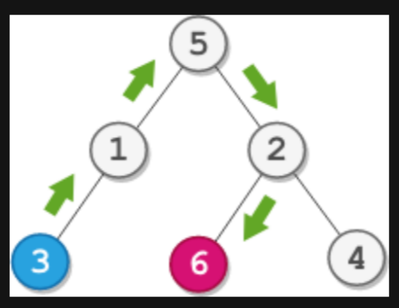
You are given the `root` of a **binary tree** with `n` nodes. Each node is uniquely assigned a value from `1` to `n`. You are also given an integer `startValue` representing the value of the start node `s`, and a different integer `destValue` representing the value of the destination node `t`.

Find the **shortest path** starting from node `s` and ending at node `t`. Generate step-by-step directions of such path as a string consisting of only the **uppercase** letters `'L'`, `'R'`, and `'U'`. Each letter indicates a specific direction:

- `'L'` means to go from a node to its **left child** node.
- `'R'` means to go from a node to its **right child** node.
- `'U'` means to go from a node to its **parent** node.

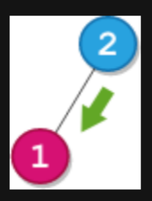
Return *the step-by-step directions of the **shortest path** from node* `s` *to node* `t`.

Example 1:




```
Input: root = [5,1,2,3,null,6,4], startValue = 3, destValue = 6
Output: "UURL"
Explanation: The shortest path is: 3 → 1 → 5 → 2 → 6.
```

Example 2:




```
Input: root = [2,1], startValue = 2, destValue = 1
Output: "L"
Explanation: The shortest path is: 2 → 1.
```

Constraints:

- The number of nodes in the tree is `n`.
- `2 <= n <= 10^5`
- `1 <= Node.val <= n`
- All the values in the tree are **unique**.
- `1 <= startValue, destValue <= n`
- `startValue != destValue`