138. Copy List with Random Pointer

Medium Topics Companies Hint

A linked list of length `n` is given such that each node contains an additional random pointer, which could point to any node in the list, or `n`

Construct a **deep copy** of the list. The deep copy should consist of exactly `n` **brand new** nodes, where each new node has its value set to t

For example, if there are two nodes `X` and `Y` in the original list, where `X.random --> Y`, then for the corresponding two nodes `x` and `y` i

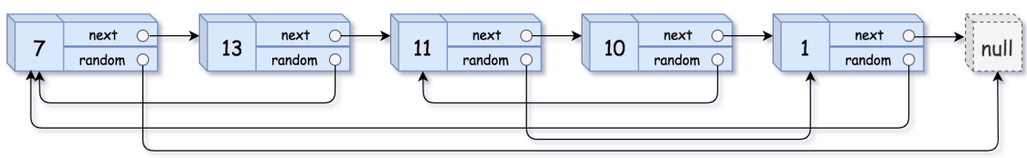
Return *the head of the copied linked list.*

The linked list is represented in the input/output as a list of `n` nodes. Each node is represented as a pair of `[val, random_index]` where:

- `val`: an integer representing `Node.val`
- `random_index`: the index of the node (range from `0` to `n-1`) that the `random` pointer points to, or `null` if it does not point to any node

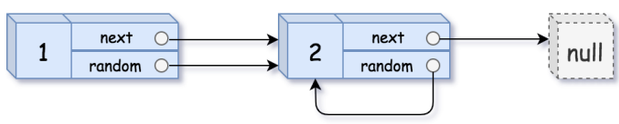
Your code will **only** be given the `head` of the original linked list.

Example 1:



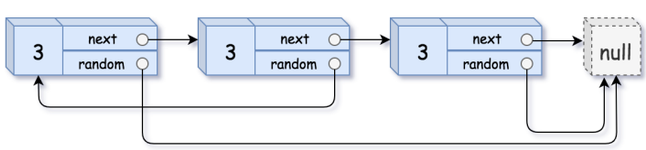

```
Input: head = [[7,null],[13,0],[11,4],[10,2],[1,0]]
Output: [[7,null],[13,0],[11,4],[10,2],[1,0]]
```

Example 2:




```
Input: head = [[1,1],[2,1]]
Output: [[1,1],[2,1]]
```

Example 3:




```
Input: head = [[3,null],[3,0],[3,null]]
Output: [[3,null],[3,0],[3,null]]
```

Constraints:

- `0 <= n <= 1000`
- `-10^4 <= Node.val <= 10^4`
- `Node.random` is `null` or is pointing to some node in the linked list.