

1146. Snapshot Array

Description

Implement a SnapshotArray that supports the following interface:

- `SnapshotArray(int length)` initializes an array-like data structure with the given length. **Initially, each element equals 0**.
- `void set(index, val)` sets the element at the given `index` to be equal to `val`.
- `int snap()` takes a snapshot of the array and returns the `snap_id`: the total number of times we called `snap()` minus `1`.
- `int get(index, snap_id)` returns the value at the given `index`, at the time we took the snapshot with the given `snap_id`.

Example 1:

Input: ["SnapshotArray","set","snap","set","get"]

[[3],[0,5],[],[0,6],[0,0]]

Output: [null,null,0,null,5]

Explanation:

```
SnapshotArray snapshotArr = new SnapshotArray(3); // set the length to be 3
snapshotArr.set(0,5); // Set array[0] = 5
snapshotArr.snap(); // Take a snapshot, return snap_id = 0
snapshotArr.set(0,6);
snapshotArr.get(0,0); // Get the value of array[0] with snap_id = 0, return 5
```

Constraints:

- $1 \leq \text{length} \leq 5 \cdot 10^4$
- $0 \leq \text{index} < \text{length}$
- $0 \leq \text{val} \leq 10^9$
- $0 \leq \text{snap_id} < (\text{the total number of times we call } \text{snap}())$
- At most $5 \cdot 10^4$ calls will be made to `set`, `snap`, and `get`.

