

380. Insert Delete GetRandom O(1)

Description

Implement the `RandomizedSet` class:

- `RandomizedSet()` Initializes the `RandomizedSet` object.
- `bool insert(int val)` Inserts an item `val` into the set if not present. Returns `true` if the item was not present, `false` otherwise.
- `bool remove(int val)` Removes an item `val` from the set if present. Returns `true` if the item was present, `false` otherwise.
- `int getRandom()` Returns a random element from the current set of elements (it's guaranteed that at least one element exists when this method is called). Each element must have the **same probability** of being returned.

You must implement the functions of the class such that each function works in **average** `O(1)` time complexity.

Example 1:

Input

```
["RandomizedSet", "insert", "remove", "insert", "getRandom", "remove", "insert", "getRandom"]  
[[], [1], [2], [2], [], [1], [2], []]
```

Output

```
[null, true, false, true, 2, true, false, 2]
```

Explanation

```
RandomizedSet randomizedSet = new RandomizedSet();  
randomizedSet.insert(1); // Inserts 1 to the set. Returns true as 1 was inserted successfully.  
randomizedSet.remove(2); // Returns false as 2 does not exist in the set.  
randomizedSet.insert(2); // Inserts 2 to the set, returns true. Set now contains [1,2].  
randomizedSet.getRandom(); // getRandom() should return either 1 or 2 randomly.  
randomizedSet.remove(1); // Removes 1 from the set, returns true. Set now contains [2].  
randomizedSet.insert(2); // 2 was already in the set, so return false.  
randomizedSet.getRandom(); // Since 2 is the only number in the set, getRandom() will always return 2.
```

Constraints:

- $-2^{31} \leq \text{val} \leq 2^{31} - 1$
- At most $2 * 10^5$ calls will be made to `insert`, `remove`, and `getRandom`.
- There will be **at least one** element in the data structure when `getRandom` is called.

