Description Solution Discuss (395) Submissions

1570. Dot Product of Two Sparse Vectors

Medium 686 91 Add to List Share

Given two sparse vectors, compute their dot product.

Implement class `SparseVector`:

- `SparseVector(nums)` Initializes the object with the vector `nums`
- `dotProduct(vec)` Compute the dot product between the instance of *SparseVector* and `vec`

A **sparse vector** is a vector that has mostly zero values, you should store the sparse vector **efficiently** and compute the dot product between two *SparseVector*.

Follow up: What if only one of the vectors is sparse?

Example 1:

```
Input: nums1 = [1,0,0,2,3], nums2 = [0,3,0,4,0]
Output: 8
Explanation: v1 = SparseVector(nums1) , v2 = SparseVector(nums2)
v1.dotProduct(v2) = 1*0 + 0*3 + 0*0 + 2*4 + 3*0 = 8
```

Example 2:

```
Input: nums1 = [0,1,0,0,0], nums2 = [0,0,0,0,2]
Output: 0
Explanation: v1 = SparseVector(nums1) , v2 = SparseVector(nums2)
v1.dotProduct(v2) = 0*0 + 1*0 + 0*0 + 0*0 + 0*2 = 0
```

Example 3:

```
Input: nums1 = [0,1,0,0,2,0,0], nums2 = [1,0,0,0,3,0,4]
Output: 6
```

Constraints:

- `n == nums1.length == nums2.length`
- `1 <= n <= 10^5`
- `0 <= nums1[i], nums2[i] <= 100`

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```java
class SparseVector {

    SparseVector(int[] nums) {

    }

    // Return the dotProduct of two sparse vectors
    public int dotProduct(SparseVector vec) {

    }
}

// Your SparseVector object will be instantiated and
called as such:
// SparseVector v1 = new SparseVector(nums1);
// SparseVector v2 = new SparseVector(nums2);
// int ans = v1.dotProduct(v2);
```