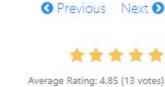
# 228. Summary Ranges 4

April 2, 2016 | 21K views



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Given a sorted integer array without duplicates, return the summary of its ranges.

### Example 1:

```
Input: [0,1,2,4,5,7]
Output: ["0->2","4->5","7"]
Explanation: 0,1,2 form a continuous range; 4,5 form a continuous range.
```

### Example 2:

```
Input: [0,2,3,4,6,8,9]
Output: ["0","2->4","6","8->9"]
Explanation: 2,3,4 form a continuous range; 8,9 form a continuous range.
```

## Solution

#### Intuition

A range covers consecutive elements. If two adjacent elements have difference larger than 1, the two elements does not belong to the same range.

### Algorithm

To summarize the ranges, we need to know how to separate them. The array is sorted and without duplicates. In such array, two adjacent elements have difference either 1 or larger than 1. If the difference is 1, they should be put in the same range; otherwise, separate ranges.

indices, representing the two boundaries of current range. For each new element, we check if it extends the current range. If not, we put the current range into the list. Don't forget to put the last range into the list. One can do this by either a special condition in the loop or

We also need to know the start index of a range so that we can put it in the result list. Thus, we keep two

putting the last range in to the list after the loop.

#### Java

```
public class Solution {
    public List<String> summaryRanges(int[] nums) {
        List<String> summary = new ArrayList<>();
        for (int i = 0, j = 0; j < nums.length; ++j) {</pre>
            // check if j + 1 extends the range [nums[i], nums[j]]
            if (j + 1 < nums.length && nums[j + 1] == nums[j] + 1)
            // put the range [nums[i], nums[j]] into the list
            if (i == j)
                summary.add(nums[i] + "");
            else
                summary.add(nums[i] + "->" + nums[j]);
            i = j + 1;
        }
        return summary;
    }
}
```

# Java (Alternative)

```
public class Solution {
    public List<String> summaryRanges(int[] nums) {
        List<String> summary = new ArrayList<>();
        for (int i, j = 0; j < nums.length; ++j){</pre>
            i = j;
            // try to extend the range [nums[i], nums[j]]
            while (j + 1 < nums.length && nums[j + 1] == nums[j] + 1)
                ++j;
            // put the range into the list
            if (i == j)
                summary.add(nums[i] + "");
            else
                summary.add(nums[i] + "->" + nums[j]);
        }
        return summary;
    }
}
```

## Complexity Analysis • Time complexity: O(n). Each element is visited constant times: either in comparison with neighbor or

- put in the result list. • Space complexity : O(1). All the auxiliary space we need is the two indices, if we don't count the return
- list.

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                  public List<String> summaryRanges(int[] nums) {
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```

public List<String> summaryRanges(int[] nums) {

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list(String) rangeSummary = new Arraylist()/).

if (nums == null | nums.length == 0) return new ArrayList<>();