503. Next Greater Element II

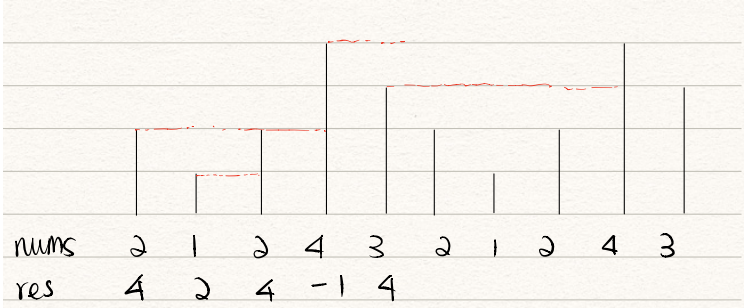
Medium 2262 89 Add to List Share

Given a circular array (the next element of the last element is the first element of the array), print the Next Greater Number for every element. The Next Greater Number of a number x is the first greater number to its traversing-order next in the array, which means you could search circularly to find its next greater number. If it doesn't exist, output -1 for this number.

Example 1:

```
Input: [1,2,1]
Output: [2,-1,2]
Explanation: The first 1's next greater number is
2;
The number 2 can't find next greater number;
The second 1's next greater number needs to
search circularly, which is also 2.
```

Note: The length of given array won't exceed 10000.



```cpp
class Solution {
public:
    vector<int> nextGreaterElements(vector<int>& nums) {
        stack<int> stack;   // monotonic stack
        vector<int> res(nums.size());   // store result in value
        int n = nums.size();

        // push into stack in reverse order
        // pretend the length of array doubled
        // use mod to get the real index
        for (int i = 2 * n - 1; i >= 0 ; i--) {
            while (!stack.empty() && stack.top() <= nums.at(i % n)) {
                // remove the smaller one
                stack.pop();
            }
            // stack.top() is the next greater elements
            res.at(i % n) = stack.empty() ? -1 : stack.top();

            stack.push(nums.at(i % n));
        }

        return res;
    }
};
```