

# 081. Search in Rotated Sorted Array II

## 081 Search in Rotated Sorted Array II

- Binary Search+Array

### Description

*Follow up for "Search in Rotated Sorted Array":*

*What if **duplicates** are allowed?*

*Would this affect the run-time complexity? How and why?*

Suppose an array sorted in ascending order is rotated at some pivot unknown to you beforehand.

(i.e., `0 1 2 4 5 6 7` might become `4 5 6 7 0 1 2`).

Write a function to determine if a given target is in the array.

The array may contain duplicates.

### 1. Thought line

### 2. Binary Search+Array

```
class Solution {
private:
    void binarySearch(vector<int>& nums, int target, int st, int ed, bool& res){
        // finish process condition
        if (st>ed) return;
        if (target<nums[st] || target>nums[ed]) return;

        // no target
        if (st==ed && nums[st]!=target) return;

        // find target
        if (st==ed && nums[st]==target) res = true;

        // keep finding process
        else{
            int midSt = (st+ed)/2, midEd = (st+ed)/2;
            if (nums[midSt]==target) {
                res = true;
                return;
            }
            // find the bottle and top elements as same value of nums[mid];
            while (midSt-1>=0 && nums[midSt]==nums[midSt-1])
                --midSt;
            while (midEd + 1<=nums.size()-1 && nums[midEd]==nums[midEd+1])
```

```

        ++midEd;
        if (target<nums[midSt])
            binarySearch(nums, target, st, midSt-1, res);
        else
            binarySearch(nums, target, midEd+1, ed, res);
    }
}

```

public:

```

bool search(vector<int>& nums, int target) {
    bool res = false;
    int pivot = 0;
    if (nums.empty()) return false;
    // find pivot
    for (int i = 1; !nums.empty() && i<=nums.size()-1; ++i){
        if (nums[i-1]>nums[i]){
            pivot = i;
            break;
        }
    }
    // process binary search on left half
    binarySearch(nums, target, 0, pivot-1, res);
    // process binary search on right half
    binarySearch(nums, target, pivot, nums.size()-1, res);
    return res;
}
};

```