一、题目说明

题目是34. Find First and Last Position of Element in Sorted Array，查找一个给定值的起止位置，时间复杂度要求是Olog(n)。题目的难度是Medium！

二、我的解答

这个题目还是二分查找（折半查找），稍微变化一下。target==nums[mid]后，需要找前面、后面的值是否=target。

一次写出来，bug free，熟能生巧！怎一个爽字了得！

```
#include<iostream>
#include<vector>
using namespace std;
class Solution{
    public:
        vector<int> searchRange(vector<int>& nums, int target){
            vector<int> res;
            if(nums.size()<1){
                res.push_back(-1);
                res.push_back(-1);
                return res;
            }

            int begin = 0;
            int end = nums.size()-1;
            int mid = -1;
            while(begin <= end){
                mid = (begin + end) / 2;
                if(nums[mid] == target){
                    begin = mid;
                    while(begin>0 && nums[begin] == target){
                        begin--;
                    }
                    if(nums[begin]==target){
                        res.push_back(begin);
                    }else{
                        res.push_back(begin+1);
                    }

                    end = mid;
                    while(end<nums.size()-1 && nums[end] == target){
                        end++;
                    }
                    if(nums[end]==target){
                        res.push_back(end);
                    }else{
                        res.push_back(end-1);
                    }
                    return res;
                }else if(nums[mid] < target){
                    begin = mid + 1;
                }else{
                    end = mid - 1;
                }
```

```
            }
            //未找到
            res.push_back(-1);
            res.push_back(-1);
            return res;
        }
};
int main(){
    Solution s;
    vector<int> nums = {5,7,7,8,8,10};
    vector<int> r = s.searchRange(nums,8);
    for(vector<int>::iterator it=r.begin();it!=r.end();it++){
        cout<<*it<<" ";
    }

    r = s.searchRange(nums,6);
    for(int i=0;i<r.size();i++){
        cout<<r[i]<<" ";
    }
    return 0;
}
```

代码性能：

```
Runtime: 12 ms, faster than 38.75% of C++ online submissions for Find First and Last Position of Element in Sorted Array.
Memory Usage: 10.4 MB, less than 70.33% of C++ online submissions for Find First and Last Position of Element in Sorted Array.
```

三、改进

上一个题目，发现`mid = begin + (end - begin) / 2;`，性能比`mid = (begin + end) / 2`高很多。

性能提高到：

```
Runtime: 8 ms, faster than 86.11% of C++ online submissions for Find First and Last Position of Element in Sorted Array.
Memory Usage: 10.4 MB, less than 82.42% of C++ online submissions for Find First and Last Position of Element in Sorted Array.
```

这究竟为何，哪位大神指导，请指点。不胜感激！！！

此处不要提`mid = (begin + end) / 2`可能溢出。。。