

001. Two Sum

001 Two Sum

- Array
- Hash Table + two pointers

Description

Given an array of integers, return **indices** of the two numbers such that they add up to a specific target.

You may assume that each input would have **exactly** one solution, and you may not use the *same* element twice.

Example:

```
Given nums = [2, 7, 11, 15], target = 9,  
  
Because nums[0] + nums[1] = 2 + 7 = 9,  
return [0, 1].
```

1. Thought Line

(1) map structure **mapHash** is for storing the occurrence numbers of each number.

2. Hash Table + Two Pointers

```
class Solution {  
public:  
    vector<int> twoSum(vector<int>& nums, int target) {  
        vector<int> result;  
        map<int,int> mapHash;  
        if (nums.size()<2) return result;  
  
        for (vector<int>::size_type i=0; i<=nums.size()-1; ++i)  
            ++mapHash[nums[i]];  
  
        for (vector<int>::size_type i=0; i<=nums.size()-2; ++i){  
            int currentValue = nums[i];  
            int biasValue = target-nums[i];  
  
            // cannot use the same element twice.  
            --mapHash[currentValue];  
            if (mapHash[biasValue]>0){  
                for (vector<int>::size_type j=i+1; j<=nums.size()-1; ++j){  
                    if (nums[j]==biasValue){  
                        result.push_back(i);  
                        result.push_back(j);  
                        return result;  
                    }  
                }  
            }  
        }  
        return result;  
    }  
};
```

