

4Sum

Given an array nums of n integers and an integer target, are there elements a, b, c, and d in nums such that $a + b + c + d = \text{target}$? Find all unique quadruplets in the array which gives the sum of target.

Note:

The solution set must not contain duplicate quadruplets.

Example:

Given array nums = [1, 0, -1, 0, -2, 2], and target = 0.

A solution set is:

```
[  
    [-1, 0, 0, 1],  
    [-2, -1, 1, 2],  
    [-2, 0, 0, 2]  
]
```

Solution in C++

```
class Solution {  
public:  
    vector<vector<int>> fourSum(vector<int>& nums, int target) {  
        sort(nums.begin(), nums.end());  
  
        map<int,int> mp;  
        for(int i=0; i<nums.size(); i++) mp[nums[i]]=i+1;  
  
        set<vector<int>> sRet; // storage will contain results  
  
        for(int i=0; i<nums.size(); i++)  
            for(int j=i+1; j<nums.size(); j++)  
                for(int k=j+1; k<nums.size(); k++) {  
                    int l = target - nums[i] - nums[j] - nums[k];  
                    if (mp[l] && (mp[l]-1)>k) {  
                        vector<int> tmp = {nums[i], nums[j], nums[k], l};  
                        sRet.insert(tmp);  
                    }  
                }  
        vector<vector<int>> ret;  
        for(auto n:sRet) ret.push_back(n);  
        return ret;  
    }  
};
```