**FNU Hassan**

**Assignment 1**

***PROGRAM to understanding of Arrays in C++:***

#include <iostream>

#include <vector>

#include <map>

using namespace std;

class Solution {

public:

vector<int> twoSum(vector<int>& nums, int target) {

map<int, int> m;

vector<int> result;

for(int i = 0; i < nums.size(); i++) {

// check if the complement exists

if(m.find(target - nums[i]) != m.end()) {

// put the complement index in the result

result.push\_back(m[target - nums[i]]);

// put the current index in the result

result.push\_back(i);

return result;

}

// put the current number and index in the map

m[nums[i]] = i;

}

return result;

}

};

int main() {

Solution sol;

vector<int> nums;

// example 1

nums = { 2, 7, 11, 15 };

cout << "Input: nums = [2, 7, 11, 15], target = 9" << endl;

cout << "Output: ";

for(int i : sol.twoSum(nums, 9)) {

cout << i << " ";

}

cout << endl;

// example 2

nums = { 3, 2, 4 };

cout << "Input: nums = [3, 2, 4], target = 6" << endl;

cout << "Output: ";

for(int i : sol.twoSum(nums, 6)) {

cout << i << " ";

}

cout << endl;

// example 3

nums = { 3, 3 };

cout << "Input: nums = [3, 3], target = 6" << endl;

cout << "Output: ";

for(int i : sol.twoSum(nums, 6)) {

cout << i << " ";

}

cout << endl;

return 0;

}

