

Two Sum

Given an array of integers `nums` and an integer `target`, return indices of the two numbers such that they add up to `target`.

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

You can return the answer in any order.

Example 1:

Input: `nums = [2,7,11,15]`, `target = 9`

Output: `[0,1]`

Explanation: Because `nums[0] + nums[1] == 9`, we return `[0, 1]`.

Example 2:

Input: `nums = [3,2,4]`, `target = 6`

Output: `[1,2]`

Example 3:

Input: `nums = [3,3]`, `target = 6`

Output: `[0,1]`

```
twoSum( nums , target ) {  
    Map<Integer, Integer> map = new HashMap<>();  
    for (int i=0; i < nums.length; i++) {  
        int cur = nums[i];  
        int x = target - cur;  
        if (map.containsKey(x)) {  
            return new int[] { map.get(x), i };  
        }  
        map.put( cur, i );  
    }  
    return null;  
}
```

Handwritten notes:

- Create HashMap* (with arrow pointing to `new HashMap<>()`)
- if x exist in HashMap then return the index* (with arrow pointing to `return new int[] { map.get(x), i };`)
- cur + x = target* (with arrow pointing to `int x = target - cur;`)
- else add the current index in HashMap* (with arrow pointing to `map.put(cur, i);`)
- time complexity = $O(n)$*
- space complexity = $O(n)$*