

974. Subarray Sums Divisible by K

Difficulty	medium
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Finished	@July 9, 2023
Problem	array
Previously asked company	Amazon Facebook
website	leetcode

Question:

Given an integer array `nums` and an integer `k`, return *the number of non-empty **subarrays** that have a sum divisible by `k`*.

A **subarray** is a **contiguous** part of an array.

Example 1:

Input: `nums = [4,5,0,-2,-3,1]`, `k = 5`
Output: 7
Explanation: There are 7 subarrays with a sum divisible by `k = 5`:
`[4, 5, 0, -2, -3, 1]`, `[5]`, `[5, 0]`, `[5, 0, -2, -3]`, `[0]`, `[0, -2, -3]`, `[-2, -3]`

Example 2:

Input: `nums = [5]`, `k = 9`
Output: 0

Optimal solution:

Time complexity: $O(n)$

Space complexity: $O(k)$ `k` varies for every input but its constant so its $O(1)$

```
class Solution(object):
    def subarraysDivByK(self, nums, k):
        dict = {}
        sum = 0
        dict[0] = 1
        res = 0
        for i in nums:
            sum += i
            temp = sum % k
            if temp in dict:
                res += dict[temp]
                dict[temp] += 1
            else:
                dict[temp] = 1
        return res
```

