560. Subarray Sum Equals K

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- Total Accepted: **3823**
- Total Submissions: **8617**
- Difficulty: **Medium**
- Contributors:love_Fawn

Given an array of integers and an integer **k**, you need to find the total number of continuous subarrays whose sum equals to **k**.

Example 1:

```
Input:nums = [1,1,1], k = 2Output: 2
```

Note:

1. The length of the array is in range [1, 20,000].
2. The range of numbers in the array is [-1000, 1000] and the range of the integer **k** is [-1e7, 1e7].

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Solution 2. From solution 1, we know the key to solve this problem is SUM[i, j]. So if we know SUM[0, i - 1] and SUM[0, j], then we can easily get SUM[i, j]. To achieve this, we just need to go through the array, calculate the current sum and save number of all seen PreSum to a HashMap. Time complexity O(n), Space complexity O(n).

```
class Solution {
public:
    int subarraySum(vector<int>& nums, int k) {
        int sum=0,result=0;
        unordered_map<int,int> presum;
        presum[0]=1;
        for(int i=0;i<nums.size();i++)
        {
            sum+=nums[i];
            if(presum.count(sum-k))
            {
                result+=presum[sum-k];
            }
            int cnt=0;
            if(presum.count(sum)) cnt+= presum[sum];
            presum[sum]=cnt+1;
        }
        return result;
    }
};
```