413. Arithmetic Slices

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Total Accepted: **11158** Total Submissions: **20476** Difficulty: **Medium** Contributors: **XiangyuLi926** (/xiangyuli926/)

A sequence of number is called arithmetic if it consists of at least three elements and if the difference between any two consecutive elements is the same.

For example, these are arithmetic sequence:

```
1, 3, 5, 7, 9
7, 7, 7, 7
3, -1, -5, -9
```

The following sequence is not arithmetic.

```
1, 1, 2, 5, 7
```

A zero-indexed array A consisting of N numbers is given. A slice of that array is any pair of integers (P, Q) such that 0 <= P < Q < N.

A slice (P, Q) of array A is called arithmetic if the sequence:

A[P], A[p + 1], ..., A[Q - 1], A[Q] is arithmetic. In particular, this means that P + 1 < Q.

The function should return the number of arithmetic slices in the array A.

Example:

```
A = [1, 2, 3, 4]

return: 3, for 3 arithmetic slices in A: [1, 2, 3], [2, 3, 4] and [1, 2, 3, 4] itself.
```

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Notes

Python

```python
class Solution(object):
    def numberOfArithmeticSlices(self, A):
        """
        :type A: List[int]
        :rtype: int
        """
        diff=[]
        slices=0
        count=1
        #create an array of differences
        for i in range(len(A)-1):
            diff.append(A[i+1]-A[i])
        #use variable count to keep tab of the longest sequence of equal diff
        for j in range(len(diff)-1):
            if diff[j]==diff[j+1]:
                count=count+1
            else:
                if count>=2:
                    slices=slices+((count-1)*count//2)
                count=1
            #for the end of the list
            if j==len(diff)-2:
                if count>=2:
                    slices=slices+((count-1)*count//2)
        return slices
```

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