5939. K Radius Subarray Averages

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Difficulty:	Medium

You are given a **0-indexed** array `nums` of `n` integers, and an integer `k`.

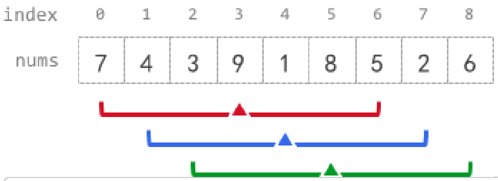
The **k-radius average** for a subarray of `nums` **centered** at some index `i` with the **radius** `k` is the average of **all** elements in `nums` between the indices `i - k` and `i + k` (**inclusive**). If there are less than `k` elements before **or** after the index `i`, then the **k-radius average** is `-1`.

Build and return *an array* `avgs` *of length* `n` *where* `avgs[i]` *is the* ***k-radius average*** *for the subarray centered at index* `i`.

The **average** of `x` elements is the sum of the `x` elements divided by `x`, using **integer division**. The integer division truncates toward zero, which means losing its fractional part.

- For example, the average of four elements `2`, `3`, `1`, and `5` is `(2 + 3 + 1 + 5) / 4 = 11 / 4 = 3.75`, which truncates to `3`.

Example 1:



```
Input: nums = [7,4,3,9,1,8,5,2,6], k = 3
Output: [-1,-1,-1,5,4,4,-1,-1,-1]
Explanation:
- avg[0], avg[1], and avg[2] are -1 because there are less than k elements before each index.
- The sum of the subarray centered at index 3 with radius 3 is: 7 + 4 + 3 + 9 + 1 + 8 + 5 = 37.
  Using integer division, avg[3] = 37 / 7 = 5.
- For the subarray centered at index 4, avg[4] = (4 + 3 + 9 + 1 + 8 + 5 + 2) / 7 = 4.
- For the subarray centered at index 5, avg[5] = (3 + 9 + 1 + 8 + 5 + 2 + 6) / 7 = 4.
- avg[6], avg[7], and avg[8] are -1 because there are less than k elements after each index.
```

Example 2:

```
Input: nums = [100000], k = 0
Output: [100000]
Explanation:
- The sum of the subarray centered at index 0 with radius 0 is: 100000.
  avg[0] = 100000 / 1 = 100000.
```

Example 3:

```
Input: nums = [8], k = 100000
Output: [-1]
Explanation:
- avg[0] is -1 because there are less than k elements before and after index 0.
```

Constraints:

- `n == nums.length`
- $1 <= n <= 10^5$
- $0 <= nums[i], k <= 10^5$

JavaScript

```
const preSum = (a) => { let pre = [0]; for (let i = 0; i < a.length; i++) { pre.push(pre[i] + a[i]); } return pre; };

const getAverages = (a, k) => {
    let n = a.length, pre = preSum(a), res = [];
    // pr(pre);
    for (let i = 0; i < n; i++) {
        if (i < k) {
            res.push(-1);
            continue;
        }
        let l = i - k, r = i + k, sum = pre[r + 1] - pre[l], len = 2 * k + 1;
        if (a[l] == undefined || a[r] == undefined) {
            res.push(-1);
            continue;
        }
        let avg = parseInt(sum / len);
        // pr(l, r, "sum", sum, "len", len, "avg", avg);
        res.push(avg);
    }
    return res;
};
```

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