

11 July 2023

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J SlidingWindowExample.java
J SlidingWindowExample.java > SlidingWindowExample > main(String[])

3
4 class SlidingWindowExample
5 {
6     static int findMaxSum(int []nums, int k)
7     {
8         int maxSum = 0;
9         int currentSum = 0;
10
11         // Calculate sum of first window of size 'k'
12         for(int i=0; i<k; i++)
13             currentSum += nums[i];
14
15         // Slide the window and update the maximum sum
16         for(int i=k; i<nums.length; i++)
17         {
18             currentSum += nums[i] - nums[i-k]; // Add the next element and subtract the first element of the previous window
19             maxSum = Math.max(maxSum, currentSum);
20         }
21         return maxSum;
22     }
23
24     public static void main(String[] args)
25     {
26         int []nums = {1,3,2,4,5,7,6};
27         int k = 3;
28         int maxSum = findMaxSum(nums, k);
29         System.out.println("Maximum sum of a subarray of size " + k + " is: " + maxSum);
30     }
31 }

```

Handwritten notes for SlidingWindowExample.java:

- Diagram of array: 

0	1	2	3	4	5	6
1	3	2	4	5	7	6

 with  $k=3$  and a window of size 3 highlighted around indices 4, 5, 6.
- Handwritten calculations:  $maxSum = 0, 9, 11, 16, 18$  and  $currentSum = 0, 6, 10, 9, 14, 11, 18, 16, 22, 18$ .

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J Main.java
J Main.java > Main > calculateWindowAverages(int[], int, int)

17
18
19 static void calculateWindowAverages(int []stream, int N, int W)
20 {
21     int sum = 0;
22
23     //Calculate the sum of first window
24     for(int i=0; i<W && i<N; i++)
25     {
26         sum += stream[i];
27         System.out.print(sum/(i+1)+" ");
28     }
29
30     // System.out.print(sum/Math.min(W, N)+" ");
31
32     // Slide the window through the stream
33     for(int i=W; i<N; i++)
34     {
35         sum += stream[i] - stream[i-W]; // Update the sum by adding the current element and removing the element at the start of the window
36         System.out.print(sum/W+" ");
37     }
38 }
39
40 }

```

Handwritten notes for Main.java:

- Diagram of array: 

0	1	2	3	4
1	2	3	4	5

 with  $N=5, W=3$  and a window of size 3 highlighted around indices 2, 3, 4.
- Handwritten calculations:  $sum = 0, 1, 3, 6, 10, 14, 12$  and  $1/1=1, (1+2)/2=1, 2, 3, 4$ .

X