

# IOITC 2022 TST 2

## Array Splitting

A participant went to take INOI 2023. When they opened the first question, they saw this as the statement:

There is an array  $A$  of length  $N$ . Split the array into at most  $K$  subarrays such that the maximum value of any subarray is minimised. The value of a subarray is the sum of its elements.

At this point, the participant was very excited, but they frowned upon seeing the following line in the constraints:

The elements of the array are not guaranteed to be positive.

With INOI now over, the participant wants to know the solution to the problem. Can you help them?

### Input

- The first line contains two integers:  $N$ , the length of the array, and  $K$ , the maximum number of subarrays that you can split the array into.
- The second line contains  $N$  space-separated integers,  $A_1, \dots, A_N$ .

### Output

Print a single integer: the maximum value of any subarray if said value is minimised. Note that you do not need to provide a construction to split the array.

### Test Data

In all inputs,

- $1 \leq N \leq 3 \times 10^5$
- $1 \leq K \leq N$
- $-10^9 \leq A_i \leq 10^9$

**Subtask 1 (3 Points):**  $A_i < 0$  for all  $i$ .

**Subtask 2 (7 Points):**  $K = 2$

**Subtask 3 (15 Points):**  $A_i > 0$  for all  $i$ .

**Subtask 4 (17 Points):**  $N \leq 80$

**Subtask 5 (18 Points):**  $N \leq 2000$

**Subtask 6 (40 Points):**  $N \leq 10^5$

### Sample Input 1

```
7 3
-3 4 12 -5 1 -2 1
```

### Sample Output 1

```
6
```

**Sample Input 2**

6 2  
-1 -3 4 -2 1 5

**Sample Output 2**

4

**Sample Input 3**

11 4  
-4 1 3 -5 2 -1 6 0 -2 3 4

**Sample Output 3**

4

**Sample Input 4**

9 3  
1 2 3 4 5 6 7 8 9

**Sample Output 4**

17

**Limits**

Time: 2 seconds

Memory: 256 MB