

During a math class, a teacher wanted to practice ordering with students. He gave an array of  $N$  integers,  $a = \{a_1, a_2, \dots, a_N\}$  to the students along with following definitions:

- Subarray is a contiguous segment of array. For example  $a[l, r] = \{a_l, a_{l+1}, \dots, a_r\}$  is a subarray, where  $1 \leq l \leq r \leq N$
- We say that a sum of a subarray is a sum of elements in this subarray
- We say that subarray  $X(= a[xl, xr] = \{a_{xl}, a_{xl+1}, \dots, a_{xr}\})$  is greater than subarray  $Y(= a[yl, yr] = \{a_{yl}, a_{yl+1}, \dots, a_{yr}\})$  if and only if:
  - $X$  has a greater sum than  $Y$
  - $X$  and  $Y$  has the same sum and  $X$  begins earlier
  - $X$  and  $Y$  has the same sum, they start in the same place and the length of  $X$  is smaller than the length of  $Y$

Since the teacher doesn't like number 0, there is no 0 in the array  $a$ . Other than array  $a$ , the teacher also gave an integer  $K$ . The task is to lists as many as possible, but not more than  $K$ , subarrays with a *positive sum* in the following order.

- The first subarray is the greatest subarray in the array according to above definition.
- The  $i^{th}$  subarray is the greatest subarray disjoint to any of the  $j^{th}$  subarray, where  $j < i$  (disjoint means that they have no common elements).

Of course in order to win with others, you have to solve the problem first.

## Input

In the first line there are two integers  $N$  and  $K$  separated by a single space.

In the second line there are  $N$  integers separated by single space denoting the array  $arr$ .

## Output

Print no more than  $K$  lines. In the  $i^{th}$  line print the sum of the  $i^{th}$  sequence in the above order.

## Constraints

$$1 \leq N \leq 10^5$$

$$1 \leq K \leq N$$

$$0 < |a_i| \leq 10^4, \text{ where } i \in [1, N]$$

## Sample Input 00

```
5 3
2 4 -10 2 -2
```

## Sample Output 00

```
6
2
```

### Explanation

Subarray  $a[1, 2] = \{a_1, a_2\}$  has sum 6 and this is the greatest value in the whole array. Next disjoint greatest subarray is  $a[4, 4] = a_4$  with sum = 2. There are no more subsequences with a positive value disjoint with the first and the second subsequence.

### Sample Input 01

```
4 2
-2 5 -1 -8
```

### Sample Output 01

```
5
```

### Explanation

Subarray  $a[2, 2] = \{a_2\}$  has sum 5 and this is the greatest value in the whole array. There are no more subsequences with a positive value disjoint with the first one, so even if  $K = 2$ , we print out just one value.

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