Problem B. Best Subsequence

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	256 mebibytes

You have an array $w_1, w_2, \ldots, w_n$ of length n.

You need to choose a subsequence of k elements. Let their indices be $1 \le i_1 < i_2 < \ldots < i_k \le n$.

Your goal is to find the minimum possible value of

$$\max\left((w_{i_1} + w_{i_2}), (w_{i_2} + w_{i_3}), \ldots, (w_{i_{k-1}} + w_{i_k}), (w_{i_k} + w_{i_1})\right)$$

among all such subsequences.

Input

The first line of input contains two integers n and k: the number of elements in the array w and the length of subsequence ($3 \le k \le n \le 200\,000$).

The second line contains n space-separated integers $w_1, w_2, \ldots, w_n$ ($1 \le w_i \le 10^9$).

Output

Print one integer: the minimum possible value of

$$\max\left((w_{i_1} + w_{i_2}), (w_{i_2} + w_{i_3}), \ldots, (w_{i_{k-1}} + w_{i_k}), (w_{i_k} + w_{i_1})\right)$$

among all subsequences of length k.

Example

standard input	standard output
5 3 17 18 17 30 35	35