Problem L. Camping in the woods

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1.5 seconds
Memory limit:	64 mebibytes

Johnny went camping together with his friends. They want to use the huts at the camping ground, which are all located on a circle, not necessarily at the same distances (for simplicity, we will measure the distance along the circle). Each member of the group, including Johnny, may choose any hut–there are at least as many huts as friends in the group. However, everybody wants some privacy and it is desirable that the distances between occupied huts are large; clearly each hut is meant for a single occupancy. Help them in planning their holidays: write a program that will determine the set of huts to be occupied, so that the minimal distance (measured along the circle) between them is maximal possible.

Input

First line of the input contains two positive integers n and k ($2 \le k \le n \le 500\,000$), denoting: the number of huts and friends (including Johnny). The second and last line contains a sequence of n positive integers a_i ($1 \le a_i \le 10^9$), denoting the distance between the hut number i from the hut number $i+1$ (for $i < n$) or the distance between hut n and 1 (for $i = n$). All distances are measured along the circle.

Output

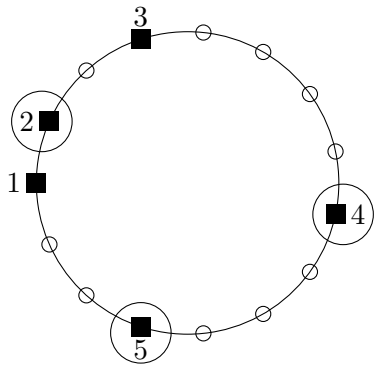
You should write a single positive integer: the maximal, among all sets of k occupied huts, minimal distance between two occupied huts. Again, the distance is measured along the circle.

Example

standard input	standard output
5 3 1 2 5 4 3	4

Note

Situation looks like on picture below:



Friends can choose huts numbered 2, 4 and 5. Then distances between neighbouring selected huts are: 7, 4 and 4.