Problem B: Bulls

Advanced Algorithms for Programming Contests

Restrictions

Time: 2 seconds
Memory: 512 MB

Problem description

A local cow breeder begged you to help him: Even considering it is mating season, his bulls are being unusually aggressive towards one another, even when they are physically separated but kept in close proximity. Since he can't figure out why that is, he decided to separate them as far as possible until their minds have settled.

For that he wants to use his old, currently unused stalls, which are all located in the same street, here modeled as an axis of coordinates. He already made sure that the stalls are still intact but now he needs your help to figure out how far he can separate the bulls, i.e. what the minimum distance will be if he distributes them onto the stalls optimally.

Input

The input consists of

- one line containing N ($3 \leq N \leq 10^4$) – the number of stalls and K ($2 \leq K < N$) – the amount of bulls
- one line containing N non-negative integers in ascending order – the coordinates of the stalls (they are not exceeding 10^9).

Output

Output a single number – the largest minimum distance (w.r.t. the stalls' coordinates) between neighboring bulls that can be achieved by distributing all of them onto the stalls.

Sample input and output

Input	Output
5 3 1 2 3 100 1000	99