E2. Guard Duty (medium)

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Princess Heidi decided to give orders to all her K Rebel ship commanders in person. Unfortunately, she is currently travelling through hyperspace, and will leave it only at N specific moments $t_1, t_2, ..., t_N$. The meetings with commanders must therefore start and stop at those times. Namely, each commander will board her ship at some time t_i and disembark at some later time t_j. Of course, Heidi needs to meet with all commanders, and no two meetings can be held during the same time. Two commanders cannot even meet at the beginnings/endings of the hyperspace jumps, because too many ships in one position could give out their coordinates to the enemy.

Your task is to find minimum time that Princess Heidi has to spend on meetings, with her schedule satisfying the conditions above.

Input

The first line contains two integers K, N ($2 \leq 2K \leq N \leq 500000, K \leq 5000$). The second line contains N distinct integers $t_1, t_2, ..., t_N$ ($1 \leq t_i \leq 10^9$) representing the times when Heidi leaves hyperspace.

Output

Output only one integer: the minimum time spent on meetings.

Examples

input
2 5 1 4 6 7 12
output
4

input
3 6 6 3 4 2 5 1
output
3

input
4 12 15 7 4 19 3 30 14 1 5 23 17 25
output
6

Note

In the first example, there are five valid schedules: $[1, 4], [6, 7]$ with total time 4, $[1, 4], [6, 12]$ with total time 9, $[1, 4], [7, 12]$ with total time 8, $[1, 6], [7, 12]$ with total time 10, and $[4, 6], [7, 12]$ with total time 7. So the answer is 4.

In the second example, there is only 1 valid schedule: $[1, 2], [3, 4], [5, 6]$.

For the third example, one possible schedule with total time 6 is: $[1, 3], [4, 5], [14, 15], [23, 25]$.