Problem B

As an art project, you built a structure which consists of a row of n columns of cubes of the same size, where the i-th column has height h_i. However, you just now learned that the safety regulations require that any two adjacent columns differ by at most D in height. In one unit of time, you can increase or decrease the height of any column by 1. The exhibition starts soon, and so you need to make the structure compliant with the safety regulations as fast as possible.

Input and output

The first line contains two integers n and D ($1 \leq n \leq 2 \cdot 10^5$, $0 \leq D \leq 10^9$), giving the number of columns of the structure and the maximum allowed difference between adjacent columns. The second line contains n non-negative integers $h_1, \ldots, h_n$ ($h_i \leq 10^9$), where h_i is the height of the i-th column in the initial structure.

Remark: You can earn half the points for a solution that is fast enough to solve the task for $n \leq 10^3$.

Output a single integer t, the minimum amount of time needed to make the structure compliant to the safety regulations. More precisely, t is the minimum of $\sum_{i=1}^{n} |a_i - h_i|$ over all sequences $a_1, \ldots, a_n$ of non-negative integers such that $|a_j - a_{j+1}| \leq D$ for $j = 1, \ldots, n-1$.

Example

Input:

```
6 1
2 10 0 2 4 3
```

Output:

```
10
```

You can reduce the height of the second column 8 times and increase the height of the third and the fifth column once, obtaining a safe sequence `2 2 1 2 3 3` in 10 units of time.