Energy Coaster

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Frank owns a roller coaster in the 4th Years fun park. The roller coaster track is a continuous circle supported on N pillars of different heights. The roller coaster starts from the pillar 1, and due to earth's gravitation, a transition from consecutive pillars i to pillar j would expend an energy $= |h_i - h_j|$, either going up or down. Frank wants to save electricity, hence wants to rearrange the pillars in such a way that the energy expended in each round is minimum possible. You need to print the minimum possible energy.

Input

The first line contains $N(1 \leq N \leq 10^5)$, the number of pillars.
The next line contains N integers $h_1, h_2, ..., h_N(1 \leq h_i \leq 10^7)$ denoting the heights of the pillars.

Output

One integer denoting the energy expended for one round.

Example

standard input	standard output
4 1 3 4 2	6

Note

The sample case:
We can rearrange in the form $[1, 4, 3, 2]$. The total energy for a round will be $|1 - 4| + |4 - 3| + |3 - 2| + |2 - 1| = 6$. You can see that this is the minimum energy possible.