

Firing

About N birds in a row, each bird i -th has power $a[i]$. If we shoot bird i -th, bird $(i-1)$ -th, bird i -th and bird $(i+1)$ -th will fight, so we lost $a[i-1]+a[i]+a[i+1]$ energy (that $a[0]=0$, $a[n+1]=0$). And then, bird $i+1$ will stand near bird $i-1$.

John will shoot the bird in descending order of power. If at the time, we have many birds that power is maximum, John'll shoot the bird i -th such that i is smallest possible. Let me know total energy John lost to shoot all bird.

Input

The first line is a integer: N . ($1 \leq N \leq 1000000$).

The next line is N integer: $a[1], a[2], \dots, a[n]$. ($1 \leq a[i] \leq 1000000000$).

Output

Only integer: Result.

Example

Input:

6

1 4 2 3 6 5

Output:

38