Rikka with Maximum Subsegment Sum

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

Maximum Subsegment Sum is a classical problem. When Rikka first saw this problem, she was still an outsider of competitive programming, and now, she has become a problem setter of this grand event.

Therefore, Rikka decides to set a problem about Maximum Subsegment Sum. Given an array x of length m, its maximum subsegment sum $\mathrm{mss}(A)$ is defined as:

$$\mathrm{mss}(A) = \max_{1 \le i \le j \le m} \left(\sum_{k=i}^{j} x_k \right).$$

Now, given an integer array A of length n, Rikka wants you to calculate the sum of the maximum subsegment sums of all subsegments of A, i.e.

$$\sum_{1 \le i \le j \le n} \mathrm{mss}([A_i, \ldots, A_j]).$$

Input

The first line contains a single integer n ($1 \le n \le 10^5$).

The second line contains n integers A_i ($-10^9 \le A_i \le 10^9$).

Output

Output a single line with a single integer, the answer. The answer can be very large, therefore, you are only required to output the answer modulo 2^{64}.

More formally, suppose the answer is x, you are required to find the smallest non-negative integer y satisfying $y = x + k \times 2^{64}$ for some integer k.

Examples

standard input	standard output
5 1 -1 1 -1 1	11
5 1 -2 3 -4 5	39
10 1 -3 -5 7 -9 10 8 -6 -4 2	555
4 -1 -2 -3 -4	18446744073709551596