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Cut the Sequence

Time Limit: 2000MS

Memory Limit: 131072K

Total Submissions: 11201

Accepted: 3428

Description

Given an integer sequence $\{a_n\}$ of length N , you are to cut the sequence into several parts every one of which is a consecutive subsequence of the original sequence. Every part must satisfy that the sum of the integers in the part is not greater than a given integer M . You are to find a cutting that minimizes the sum of the maximum integer of each part.

Input

The first line of input contains two integer N ($0 < N \leq 100\,000$), M . The following line contains N integers describes the integer sequence. Every integer in the sequence is between 0 and 1 000 000 inclusively.

Output

Output one integer which is the minimum sum of the maximum integer of each part. If no such cuttings exist, output -1 .

Sample Input

8 17
2 2 2 8 1 8 2 1

Sample Output

12

Hint

Use 64-bit integer type to hold M .

Source

POJ Monthly--2006.09.29, zhucheng

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