E. Goods transportation

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

There are n cities located along the one-way road. Cities are numbered from 1 to n in the direction of the road.

The i-th city had produced p_i units of goods. No more than s_i units of goods can be sold in the i-th city.

For each pair of cities i and j such that $\mathbf{1 \le i < j \le n}$ you can **no more than once** transport **no more than** c units of goods from the city i to the city j. Note that goods can only be transported from a city with a lesser index to the city with a larger index. **You can transport goods between cities in any order.**

Determine the maximum number of produced goods that can be sold in total in all the cities after a sequence of transportations.

Input

The first line of the input contains two integers n and c ($1 \le n \le 10\,000$, $0 \le c \le 10^9$) — the number of cities and the maximum amount of goods for a single transportation.

The second line contains n integers p_i ($0 \le p_i \le 10^9$) — the number of units of goods that were produced in each city.

The third line of input contains n integers s_i ($0 \le s_i \le 10^9$) — the number of units of goods that can be sold in each city.

Output

Print the maximum total number of produced goods that can be sold in all cities after a sequence of transportations.

Examples

input
3 0 1 2 3 3 2 1

output
4

input
5 1 7 4 2 1 0 1 2 3 4 5

output
12

input
4 3 13 10 7 4 4 7 10 13

output
34