Problem A. Maximum period

Time limit:	please refer to DOM Judge
Memory limit:	please refer to DOM Judge

A period of a string is a prefix that can be used to generate the whole string by repeating the prefix. The last repetition may be partial. For example, the periods of *abcabca* are *abc*, *abcabc* and *abcabca*.

Given a weighted string S with size n, the weight of the i-th character of which is w_i.

The weight of substring $S[L \cdots R]$ is $\sum_{i=L}^{R} w_i$.

Among all period of S, we call the one with the maximum weight "maximum period".

Your task is to find the weight of the maximum period of S.

Input

The first line of the input contains an integers n — the size of S.

The second line of the input contains a string S with size n.

The third line of the input contains n integers $w_1, w_2, \cdots, w_n$ — the weight of each character of S.

- $1 \leq n \leq 10^6$
- $|w_i| \leq 1000$

Output

You should print an integer which represents the weight of the maximum period of S.

Examples

Standard Input	Standard Output
3 aaa 2 -3 4	3
5 ababa -1 3 -1 -1 2	2

This page is intentionally left blank