

## Problem D. Delight for a Cat

Input file: `delight.in`  
Output file: `delight.out`

A cat is going on an adventure.

Each hour, the cat can be either *sleeping* or *eating*. The cat cannot be doing both actions at the same hour, and the cat is doing exactly one of these actions for the whole hour.

For each of the next  $n$  hours, the amount of *delight* the cat is getting if it is sleeping or eating during that hour is known. These amounts can be different for each hour.

An integer time period  $k$  is also known. Among every  $k$  consecutive hours, there should be at least  $m_s$  hours when the cat is sleeping, and at least  $m_e$  hours when the cat is eating. So, there are exactly  $n - k + 1$  segments of  $k$  hours for which this condition must be satisfied.

Find the maximum total amount of delight the cat can get during the next  $n$  hours.

### Input

The first line of the input contains four integers  $n$ ,  $k$ ,  $m_s$ , and  $m_e$  ( $1 \leq k \leq n \leq 1000$ ;  $0 \leq m_s, m_e \leq k$ ;  $m_s + m_e \leq k$ ) — the number of upcoming hours, the length of the period (in hours), and the minimum number of hours the cat should be sleeping and eating out of every  $k$  consecutive hours, respectively.

The second line contains  $n$  integers  $s_1, s_2, \dots, s_n$  ( $0 \leq s_i \leq 10^9$ ) — the amount of delight the cat gets when it is sleeping during the first, the second, ..., the  $n$ -th hour.

The third line contains  $n$  integers  $e_1, e_2, \dots, e_n$  ( $0 \leq e_i \leq 10^9$ ) — the amount of delight the cat gets when it is eating during the first, the second, ..., the  $n$ -th hour.

### Output

In the first line, output a single integer — the maximum total amount of delight the cat can get during the next  $n$  hours.

In the second line, output a string of length  $n$  consisting of characters “S” and “E”. The  $i$ -th character of this string should correspond to whether the cat should sleep (“S”) or eat (“E”) in the  $i$ -th hour to get the maximum total amount of delight out of these  $n$  hours.

### Example

<code>delight.in</code>	<code>delight.out</code>
10 4 1 2	69
1 2 3 4 5 6 7 8 9 10	EEEESEESS
10 9 8 7 6 5 4 3 2 1	