

# Sequential Manufacturing

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A certain manufacturing process consists of  $N$  different machines, through which raw material and partial assemblies pass sequentially to produce a good. The  $i$ 'th machine takes  $T_i$  seconds to process a good.

A good moves automatically through the system once input into the first system. To give the system some tolerance with regards to timing, each machine  $i$  has an input area where  $K_i$  items can be stored before processing. This means that when machine  $i$  finishes processing a good, that good passes immediately to machine  $i + 1$  if machine  $i + 1$  is not already processing another item, and otherwise is placed in its input area until that machine becomes free and can process the good. If a machine finishes a good, and the next machine is currently being used, and its input area is full, the whole system shuts down. If a machine and the one after it finish processing an item at the same time, that item can pass immediately to the second machine without passing through the waiting area.

You just got a huge order of goods, and now wonder—how quickly can you finish manufacturing these goods, without the system shutting down? You have an infinite supply of raw materials, and can choose at which times you put in items in machine 1.

## Input

The first line contains the two integers:  $N$  ( $1 \leq N \leq 1000$ ), the number of machines, and  $P$  ( $1 \leq P \leq 10^9$ ), the number of items that should be produced.

The next line contains the processing times  $T_1, \dots, T_N$  in seconds ( $1 \leq T \leq 10^9$ ), which are all integers.

The next line contains the sizes of the input areas  $K_2, \dots, K_N$  ( $1 \leq K_i \leq 10^9$ ). Note that the first machine does not have an input area.

## Output

Output the number of seconds it takes to manufacture all the requested items. Manufacturing is considered complete when the last item has been processed by the last machine.

## Examples

### Sample input 1

```
2 3
1 5
100
```

### Sample output 1

```
16
```

## Limits

Time limit is 1 second.

Memory limit is 256 megabytes.