## Problem F <br> Stock Market

Adrian owns a stock that he previously purchased, and wants to sell that stock. Currently, at day 0 , the price of the stock is $P_{0}$. As a robot, Morgan can predict the future. Morgan tells Adrian that the price changes will repeat every $N$ days.

Formally, suppose that the price change from day $i$ to day $i+1$ for $0 \leq i \leq N-1$ is $D_{i}$. The price change from day $i$ to $i+1$ for $i \geq N$ is $D_{i}=D_{i \bmod N}$. The price of the stock at day $i$ for $i>0$ is $P_{i}=P_{i-1}+D_{i-1}$. It is possible for a price to be negative.

Moreover, Morgan also knows that the price is on a downward trend. That is, the sum of all $D_{i}$ is negative.
The following table is the stock price of each day if $N=6, P_{0}=20$, and $D_{0 . .5}=[4,-6,-1,4,-9,-2]$.

| Day | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | $\cdots$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Price | 20 | 24 | 18 | 17 | 21 | 12 | 10 | 14 | 8 | 7 | 11 | 2 | 0 | 4 | -2 | -3 | 1 | -8 | $\cdots$ |

Adrian can only sell the stock when the price is at least $X$, the price when he purchased the stock, to avoid any losses. As a thrill seeker, Adrian also would like to sell his stock at the lowest price possible while still being at least $X$.

Help Adrian to determine the lowest price of the stock that is not lower than $X$, or tell him if it is impossible. Note that Adrian can sell his stock at day 0 , if $P_{0} \geq X$.

## Input

Input begins with three integers $N P_{0} X\left(1 \leq N \leq 100000 ; 1 \leq P_{0}, X \leq 10^{9}\right)$ representing the number of days in a cycle, the price at day 0 , and the price when Adrian purchased the stock, respectively. The next line contains $N$ integers $D_{i}\left(-10^{9} \leq D_{i} \leq 10^{9}\right)$ representing the price changes that repeat every $N$ days. It is guaranteed that the sum of all $D_{i}$ is negative.

## Output

If a price not lower than $X$ exists, output an integer in a single line representing the lowest price of the stock that is not lower than $X$. Otherwise, output -1 in a single line.

## Sample Input \#1

```
6 20 5
4 -6 -1 4 4-9 -2
```


## Sample Output \#1

```
7
```

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## Explanation for the sample input/output \#1

The table in the description represents this example. The lowest price of the stock that is not lower than 5 is $P_{9}=7$.

## Sample Input \#2

```
6 20 1
4 -6 -1 4 -9 -2
```


## Sample Output \#2

1

## Explanation for the sample input/output \#2

The lowest price of the stock that is not lower than 1 is $P_{16}=1$.

## Sample Input \#3

```
134
-1
```


## Sample Output \#3

$-1$

## Explanation for the sample input/output \#3

The current price, $P_{0}$, is 3 and for any subsequent day, the price will never go up. Thus, it is impossible for the price to reach at least $X=4$.

