Middle Earth Technical University organizes a coding competition. In this competition, people play with each other using AI programs that they write. Every pair of programmers play with each other, and winner steals $K$ points from the loser's rating and adds it to their rating. If the loser has less than $K$ rating, the winner steals all of their ratings.

Can you find the maximum rating after a total of $M$ matches?

*Note that all of the $M$ matches can be done by the same competitor.*

**Input**

First-line contains the integers $N$ (the number of contestants), $K$ (the number of points that the winner steals from the loser), and $M$ (the number of total matches).

The second line contains an array of $N$ nonnegative integers. $A_i$ correspond to $i^{th}$ contestant's rating.

- $1 \leq N, K \leq 10^5$
- $1 \leq A_i \leq 10^5$

**Output**

Print the maximum rating after $M$ matches.

**Examples**

Input:

```
4 2 3
1 2 3 4
```

Output:

```
9
```
4 1 4
1 1 1 4

Output:

7