

# Many Products

Input file:            **standard input**  
Output file:        **standard output**  
Time limit:        3 seconds  
Memory limit:     1024 megabytes

You are given two positive integers  $N$  and  $M$  and a sequence of integers  $A = (A_1, A_2, \dots, A_N)$ . Let  $\mathbf{X}$  be the set of all  $N$ -tuples of positive integers  $(x_1, x_2, \dots, x_N)$  that satisfy  $\left(\prod_{i=1}^N x_i\right) = M$ .

Find the following value modulo 998244353.

$$\sum_{(x_1, x_2, \dots, x_N) \in \mathbf{X}} \prod_{i=1}^N (x_i + A_i)$$

## Input

The input is given from Standard Input in the following format:

|                                      |
|--------------------------------------|
| $N$ $M$<br>$A_1$ $A_2$ $\dots$ $A_N$ |
|--------------------------------------|

- All values in the input are integers.
- $1 \leq N \leq 2 \times 10^5$
- $1 \leq M \leq 10^{12}$
- $0 \leq A_i < 998244353$  ( $1 \leq i \leq N$ )

## Output

Output the answer.

## Examples

| standard input                         | standard output |
|----------------------------------------|-----------------|
| 2 3<br>0 1                             | 10              |
| 5 1<br>0 1 2 3 4                       | 120             |
| 10 314159265358<br>0 1 2 3 4 5 6 7 8 9 | 658270849       |

## Note

In the first sample,  $\mathbf{X} = \{(1, 3), (3, 1)\}$ , and the answer is  $(1 + 0)(3 + 1) + (3 + 0)(1 + 1) = 10$ .