E. Product Oriented Recurrence

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Let $f_x = c^{2x-6} \cdot f_{x-1} \cdot f_{x-2} \cdot f_{x-3}$ for $x \geq 4$.

You have given integers n, f_1, f_2, f_3, and c. Find $f_n \bmod (10^9 + 7)$.

Input

The only line contains five integers n, f_1, f_2, f_3, and c ($4 \leq n \leq 10^{18}$, $1 \leq f_1, f_2, f_3, c \leq 10^9$).

Output

Print $f_n \bmod (10^9 + 7)$.

Examples

input	Copy
5 1 2 5 3	
output	**Copy**
72900	

input	Copy
17 97 41 37 11	
output	**Copy**
317451037	

Note

In the first example, $f_4 = 90$, $f_5 = 72900$.

In the second example, $f_{17} \approx 2.28 \times 10^{29587}$.