



Problem J. Polynomial

Input file: standard input
Output file: standard output
Time limit: 3 seconds
Memory limit: 256 megabytes

Given a polynomial P with coefficients from $\{0, 1\}$, print the number of odd coefficients in its n -th power.

Input

The first line contains an integer d ($1 \leq d \leq 20$) — the degree of the polynomial.

The second line contains $d + 1$ integers a_i ($a_i \in \{0, 1\}$), denoting the coefficients of P from lowest to greatest.

The third line contains an integer n ($1 \leq n \leq 10^{16}$).

Output

Print the answer to the problem in the only line.

Examples

standard input	standard output
1 1 1 3	4
5 0 1 1 0 1 1 3	10

Note

In the first sample test $P(x)^3 = 1 + 3x + 3x^2 + x^3$, having all 4 coefficients odd.