A. Modular Exponentiation

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

The following problem is well-known: given integers n and m, calculate

$$2^n \bmod m,$$

where $2_n = 2 \cdot 2 \cdot \ldots \cdot 2$ (n factors), and $x \bmod y$ denotes the remainder of division of x by y.

You are asked to solve the "reverse" problem. Given integers n and m, calculate

$$m \bmod 2^n.$$

Input

The first line contains a single integer n ($1 \le n \le 10^8$).

The second line contains a single integer m ($1 \le m \le 10^8$).

Output

Output a single integer — the value of $m \bmod 2^n.$

Examples

input

Copy

4
42

output

Copy

10

input

Copy

1
58

output

Copy

0

input

Copy

98765432
23456789

output

Copy

23456789

Note

In the first example, the remainder of division of 42 by $2_4 = 16$ is equal to 10.

In the second example, 58 is divisible by $2_1 = 2$ without remainder, and the answer is 0.