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

$$,$$

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

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

$$.$$

Input

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

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

Output

Output a single integer — the value of .

Examples

input
4
42
output
10

input
1
58
output
0

input
98765432
23456789
output
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.