Problem E. Modular Exponentiation

Time Limit 1000 ms
Mem Limit 262144 kB

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	Output
4 42	10

Input	Output
1 58	0

Input	Output
98765432 23456789	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.