Problem F. Grand Prix of Array Count

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	256 mebibytes

An array a of length n is called *funny* if, for every pair of indices (i, j) where $1 \le i, j \le n$, the following condition holds: if $i + j$ is an even number, then $a_{(i+j)/2} = \gcd(a_i, a_j)$. For example, an array $[6, 2, 2, 2, 4]$ is funny.

You are given two positive integers n and k. Find the amount of funny arrays of length n consisting only of integers between 1 and k. As this number may be very large, output it modulo $10^9 + 7$.

Input

The only line contains two integers n and k ($5 \le n \le 10^{12}$, $2 \le k \le 10^{12}$).

Output

Print a single number: the answer to the problem modulo $10^9 + 7$.

Examples

standard input	*standard output*
5 2	4
32 5	32

Note

In the first sample, there are 4 funny arrays: $[1, 1, 1, 1, 1]$, $[1, 1, 1, 1, 2]$, $[2, 1, 1, 1, 1]$, $[2, 2, 2, 2, 2]$.