

J. The Archive Matrix

Standard I/O | Time Limit: 1.0s | Memory Limit: 256MB |

Deep beneath Sector 2026, expedition lead Niko reaches the entrance to the Central Core Tower to restore the planetary stellar matrix. The main security blast doors are locked by a quantum keypad left behind by the ancient artificial entity known as The World Machine.

Beside the keypad lies access to an infinite data archive consisting of countably infinite storage racks labeled 1, 2, 3, ... and infinitely many data codices titled 1, 2, 3, ... Every codex i contains a single positive integer a_i .

The archive maintains strict self-referential equilibrium rules:

1. Codex i is filed on storage rack a_i .
2. The total number of codices placed on storage rack i is exactly a_i .
3. Codex 1 contains the value 1 (i.e., $a_1 = 1$).
4. The values are non-decreasing: if $i < j$, then $a_i \leq a_j$ (this uniquely defines the sequence a_i , known as Golomb's sequence).

The security console prompt reads: 'The unlock passcode is the sum of the numbers written inside all codices titled from 1 to 10^{18} , taken modulo 12345678987654321. Help Niko calculate the door code.

Input

The input consists of a single line containing two space-separated integers: 10^{18} and 12345678987654321.

Output

Print a single integer — the unlock passcode modulo 12345678987654321.

Standard Input	Standard Output
1000000000000000000 12345678987654321	?