

Food Chain

Time Limit: 1 second
Memory Limit: 512 MB

Problem Statement

“Xing Yang eats bears. Bears eat rabbits. Rabbits eat bananas. Bananas drink milk.”
- Dec Course Elementary Trainers, 2019

Rawry the Dinosaur eats A Xing Yangs. Xing Yang eats B green bears. Green Bear eats C rabbits. Rabbit eats D bananas. Banana drinks E glasses of milk. How many glasses of milk does Rawry drink? Output the answer modulo $10^9 + 9$.

Input Format

The first and only line of input will contain five integers, A , B , C , D and E .

Output Format

Your output should consist of a single line containing a single integer, the number of glasses of milk Rawry drinks modulo $10^9 + 9$.

Limits

For all test cases, $0 \leq A, B, C, D, E \leq 10^{18}$.

Subtask 1: $A, B, C, D, E \leq 10$ (25 marks)

Subtask 2: $A, B, C, D, E \leq 10^3$ (15 marks)

Subtask 3: There are no more constraints. (60 marks)

Sample Input

This sample input satisfies the constraints of all subtasks.

3 4 2 5 4

Sample Output

480
