

Atom Professor

Gökalp is a physics professor working on atoms, and he invented a machine for his experiments. Inside this machine, T tubes are placed on a round platform and the machine is designed to throw atoms into these tubes.

The working principle of the machine is as follows:

- In the first step, A atoms are thrown into the first tube and the platform rotates so that it can process the next tube.
- In the second step, it throws B atoms into the second tube and the platform rotates so that it can process the next tube.
- In each subsequent step, as many new atoms as the number of atoms in the previous and two previous tubes are thrown into the next tube, and the platform rotates again.

The machine works for N steps in total.

While Professor Gökalp is performing this experiment, a situation he cannot explain occurs, and when the number of atoms in a tube is equal to $10^9 + 7$, these atoms suddenly disappear.

Professor Gökalp asks for your help to test how consistent his experiments are, and asks you to calculate how many atoms will be in the last processed tube at the end of N process.

Input Format

- 4 numbers are given in a line, separated by a space: T, A, B, N respectively.

Constraints

- $3 \leq T \leq 30$
- $3 \leq N \leq 10^9$
- $1 \leq A, B \leq 100$

Output Format

- Print the number of atoms in the last treated tube on the screen, after N operations.

Sample Input 0

5 3 4 8

Copy

Sample Output 0

93

Copy

Submit Solution

✓ **Points:** 1

⌚ **Time limit:** 1.0s

Java 8: 3.0s

Python: 5.0s

[All submissions](#)

[Best submissions](#)

[My submissions](#)

Explanation 0

	TUBE 1	TUBE 2	TUBE 3	TUBE 4	TUBE 5
STEP 1	3	0	0	0	0
STEP 2	3	4	0	0	0
STEP 3	3	4	7	0	0
STEP 4	3	4	7	11	0
STEP 5	3	4	7	11	18
STEP 6	32	4	7	11	18
STEP 7	32	54	7	11	18
STEP 8	32	54	93	11	18

Sample Input 1

4 28 47 7

Copy

Sample Output 1

694

Copy

Sample Input 2

5 12 41 6

Copy

Sample Output 2

253

Copy

[Request clarification](#)

Main Sponsor



Platinum Sponsor

