

K Consecutive

Author: Rezwan Arefin
Input file: standard input
Output file: standard output
Time limit: 1 second
Memory limit: 128 megabytes

Mamnoon is staying at the girls hostel for N days. The hostel serves M different types of food each day. But one can eat only one type of food each day. Mamnoon doesn't like to eat the same thing every day, so he decides that he won't eat the same type of food for more than K consecutive days.

Help Mamnoon count the number of ways he can spend his stay at the girls hostel for the next N days. One way is different from another if he eats different type of food on some day.

Input

First line contains 3 space separated integers N , M and K ($1 \leq N, M, K \leq 5000$).

Output

Output number of ways he can eat the foods such that he doesn't eat same type of food for more than K consecutive days. Since the answer can be very large, print the remainder of the answer when divided by $10^9 + 7$.

Scoring

Subtask 1 (points: 15)

$K = 1$

Subtask 2 (points: 10)

$1 \leq N, K, M \leq 8$

Subtask 3 (points: 40)

$1 \leq N, K, M \leq 500$

Subtask 4 (points: 35)

No further restrictions.

Example

Sample Input	Sample Output
3 2 2	6
20 10 9	11990

Explanation

First sample: If the foods are numbered 1 and 2, then he can spend his stay the following ways: [1, 1, 2], [1, 2, 2], [1, 2, 1], [2, 1, 1], [2, 2, 1], [2, 1, 2].

Note

You don't have to pass the samples to get points on a smaller / larger subtask.