

Lecture Gap

time limit per test: 1 second (3 seconds for Python)
memory limit per test: 500 megabytes
input: standard input
output: standard output
points: 100 · problem code: lecturegap

You are scheduling k lectures on days $1, 2, \dots, n$. Let x_i be the day of the i -th lecture. The days must satisfy

$$1 \leq x_1, x_2, \dots, x_k \leq n$$

and consecutive lectures must be at least g days apart:

$$x_{i+1} \geq x_i + g$$

for every i . (In particular the sequence is automatically non-decreasing. If $g = 0$, two lectures may share a day.)

Count the number of integer sequences x that meet these conditions. Since the answer can be large, output it modulo $10^9 + 7$.

Input

A single line containing three integers n , k , and g .

Output

Print one integer: the number of valid lecture schedules, modulo $10^9 + 7$.

Constraints

- $1 \leq k \leq 10^6$
- $1 \leq n \leq 10^6$
- $0 \leq g \leq 10^9$

Example 1

Input

```
5 2 1
```

Output

```
10
```

Explanation

Consecutive lectures must fall on strictly later days. The valid pairs (x_1, x_2) are all $1 \leq x_1 < x_2 \leq 5$, and there are $\binom{5}{2} = 10$ of them.

Example 2

Input

```
5 2 0
```

Output

```
15
```

Explanation

Now lectures may share a day, so the condition is $1 \leq x_1 \leq x_2 \leq 5$. There are $\binom{5+2-1}{2} = 15$ such pairs.

Example 3

Input

5 1 10

Output

5

Explanation

A single lecture can be placed on any of the 5 days. The gap g is unused when $k = 1$.