# Problem N. Just Add It

| | |
|---|---|
| **Time Limit** | 1000 ms |
| **Mem Limit** | 1572864 kB |
| **Code Length Limit** | 50000 B |
| **OS** | Linux |

For two given integers n and k find $(Z_n + Z_{n-1} - 2Z_{n-2}) \bmod 10000007$, where $Z_n = S_n + P_n$ and $S_n = 1^k + 2^k + 3^k + \ldots + n^k$ and $P_n = 1^1 + 2^2 + 3^3 + \ldots + n^n$.

## Input

There are several test cases (≤ 10000). In each case two space separated positive integers n and k are given.
For last test case n and k are given as 0 0, which is not to be processed.

## Constraints

$1 < n < 200000000$
$0 < k < 1000000$

## Output

For each case print the asked value in separate line.

## Example

| Input | Output |
|---|---|
| 10 3<br>9 31<br>83 17<br>5 2<br>0 0 | 4835897<br>2118762<br>2285275<br>3694 |