Problem H. Hack

Input file:	hack.in
Output file:	hack.out
Time limit:	1 second
Memory limit:	256 mebibytes

The newbie hacker Vasya dreams of becoming an employee of a major international IT company. For the present, while surfing the net, he came across a certain KiloBank. The title suggested to him that the bank is not so new, and its security system may be not up-to-date. That's exactly what Vasya was looking for! After some time, the hacker got access to the database containing usernames and password hashes. There is only one little thing left: bruteforce the original passwords and perform fraudulent transactions.

First of all, of course, we need to figure out how the hash function works. It turns out that the password can be up to several megabytes long! The database stores the password length unencrypted in the first field for every user. The second field looks like a simple 32-bit hash of the password. But the developers apparently understood that this is not enough, and even a large bit width of the hash function sooner or later will not be able to keep secrets from hackers like Vasya. So the developers invented the third field. It is unknown how Vasya could guess the meaning of that field, but he managed to do it! He realized that π-function is computed for a password, then its value is hashed and written to the database as the third field.

Given the password P and the position i from 1 to the length of P, the value $\pi(i)$ is defined as follows: it is the length of the longest substring of P starting strictly after the first character and ending at i-th character that is equal to a prefix of P of the appropriate length. In particular, $\pi(1)$ is always zero since only the empty substring satisfies the definition.

"Probably it is even possible to compute the function fast...", Vasya thought, but couldn't find too much time for this problem. Now, to move on, Vasya wants to understand how many different π-functions exist for strings of length N (considering that there is no limit on the size of the alphabet: we are allowed to make up strings from an infinite set of characters).

After digging in publicly available sources, he realized that the problem had already been studied. A sufficiently efficient algorithm for finding that number had not been discovered yet.

However, Vasya thought for a while and decided that there are only few strings for which $\pi(i)$ exceeds K at any position i, so they can be completely ignored. Thus, he now wants to count the number of different π-functions such that all their values are at most K. Would it simplify the problem?

Vasya was born and grew up in the field $\mathbb{Z}_{1\,000\,000\,007}$, therefore, he is interested only in the remainder of division of the number he seeks by $10^9 + 7$.

Input

The only line of input contains two integers N and K ($1 \le N \le 10\,000\,000$, $0 \le K \le 10$): the length of the string and Vasya's upper bound.

Output

Output the number Vasya is interested in: the number of different π-functions for strings of length N such that all their values are at most K, taken modulo $10^9 + 7$.

Example

hack.in	hack.out
5 2	17