

7265 Stamps

Bob sells stamps. There are n kinds of stamps. The amount of each kind of stamps is infinite.

Each time Alice buys a stamp from Bob, she gets a random kind of stamp. The probability for her to get any kind of stamp is $1/n$.

Alice wants to collect all kinds of stamps. However, Bob gets bored when he sells stamps to Alice. So for the i -th stamp he sells to Alice, Bob will ask for $H(i, k)$ money from Alice (k is a constant integer).

The function $H(i, k)$ is defined as follow:

$$H(i, 0) = 1, \text{ for } i = 1, 2, \dots$$

$$H(i, k) = H(1, k - 1) + H(2, k - 1) + \dots + H(i, k - 1), \text{ when } k > 0 \text{ and } i > 0.$$

Even Alice is rich, she notices that it will cost her a huge amount of money. So she wants to know the expected cost when she collects all kinds of stamps.

Input

Up to 100000 test cases. Each test case is one line containing a pair of integers:

n k

For all test cases, $1 \leq n \leq 100000$, $0 \leq k \leq 9$. Input ends with $n = 0$ and $k = 0$

Output

One line for each test cases. If the expected cost is $MONEY$, output $MONEY \times (n!)^{10} \% 1000003$ instead.

It is guaranteed that $(MONEY \times (n!)^{10})$ is always an integer. 1000003 is a prime number.

Sample Input

```
1 0
3 0
4 1
100 9
0 0
```

Sample Output

```
1
562972
739841
816538
```