Problem E. Dulceață de Vișine

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

Dulceață is a sweet fruity spread that is usually consumed on bread for breakfast. Dulceață can be made from many types of fruits, but one traditional choice is vișine (sour cherries). To make Sour Cherry Dulceață, one has to first mix the cherries with sugar and leave them overnight. By the next morning, the sour cherries will be sitting in their syrupy juice. Add a little bit of lemon juice and then let them boil slowly until the mixture has a deep red color and the perfect consistency.

There are infinitely many types of sour cherries, numbered by integers $1, 2, 3, \ldots$. Each type i has an associated sweetness value of the form $2^i - 1$. You want to make the greatest Dulceață ever, one that has sweetness n. You will buy k cherries to make Dulceață, but you don't know the best value of k. So you decided to see how many ways there are to make Dulceață for each integer k between 1 and p, inclusive. Since these numbers can be quite large, output them modulo $10^9 + 7$.

Two ways to make Dulceață are considered different if there is a type i such that these two ways use a different number of cherries of type i.

Input

The first and only line of the input contains two integers n and p ($1 \le n \le 10^{18}$, $1 \le p \le 1000$).

Output

Print p values, where the k-th value represents the number of ways to make Dulceață with k sour cherries modulo $10^9 + 7$.

Examples

standard input	*standard output*
4 2	0 1
14 4	0 1 0 1
9 3	0 0 2