

Begin: 2021-10-09
12:30 CST

NCPC Simulation Day1

End: 2021-10-09
17:30 CST**Elapsed:** 06:15:56**Running****Remaining:** -2:44:03[Overview](#)[Problem](#)[Status](#)[Rank \(05:00:00\)](#)[0 Comments](#)[Setting](#)[☆Favorite](#)[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#)[Submit](#)[Status](#)[My Status](#)**Time limit**

1000 ms

Memory limit

262144 kB

K - A Determined Cleanup

In order to put away old things and welcome a fresh new year, a thorough cleaning of the house is a must.

Little Tommy finds an old polynomial and cleaned it up by taking it modulo another. But now he regrets doing this...

Given two integers p and k , find a polynomial $f(x)$ with non-negative integer coefficients strictly less than k , whose remainder is p when divided by $(x + k)$. That is $f(x) = q(x) \cdot (x + k) + p$, where $q(x)$ is a polynomial (not necessarily with integer coefficients).

Input

The only line of input contains two space-separated integers p and k ($1 \leq p \leq 10^{18}$, $2 \leq k \leq 2\,000$).

Output

If the polynomial does not exist, print a single integer -1, or output two lines otherwise.

In the first line print a non-negative integer d — the number of coefficients in the polynomial.

In the second line print d space-separated integers a_0, a_1, \dots, a_{d-1} , describing a polynomial $f(x) = \sum_{i=0}^{d-1} a_i \cdot x^i$ fulfilling the given requirements. Your output should satisfy $0 \leq a_i < k$ for all $0 \leq i \leq d-1$, and $a_{d-1} \neq 0$.

If there are many possible solutions, print any of them.

Examples

Input
46 2
Output
7 0 1 0 0 1 1 1

Input
2018 214
Output
3 92 205 1

Note

In the first example, $f(x) = x^6 + x^5 + x^4 + x = (x^5 - x^4 + 3x^3 - 6x^2 + 12x - 23) \cdot (x + 2) + 4$



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Server Time: 2021-10-09 18:45:56 CST