A. Egyptian Coins

time limit per test: 4 s.

memory limit per test: 256 MB

A positive integer x is called a *power of two* if it can be represented as $x = 2^y$, where y is a non-negative integer. So, the *powers of two* are $1, 2, 4, 8, 16, \ldots$.

A wealthy Egyptian businessman has a vault containing a selection of coins. These coins represent values in powers of two. i.e $2^0, 2^1, 2^2, \ldots$. This man is so rich that he has coins representing every power of two and **he possesses infinitely many coins of each value**.

The businessman is given two positive integers n and k. He wants to find out whether he can purchase an item of value n using exactly k coins from his collection.

Input

The only line of the input contains two integers n and k ($1 \le n \le 10^9$, $1 \le k \le 2 \cdot 10^5$).

Output

If it is impossible to represent n as the sum of k powers of two, print `NO`.

Otherwise, print `YES`, and then print k positive integers $b_1, b_2, \ldots, b_k$ such that each of b_i is a power of two, and $\sum_{i=1}^{k} b_i = n$. If there are multiple answers, you may print any of them.

Examples

input	Copy
9 4	

output	Copy
YES 1 2 2 4	

input	Copy
8 1	

output	Copy
YES 8	

input	Copy
5 1	

output	Copy
NO	

input	Copy
3 7	

output	Copy
NO	

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