Turning Permutation

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	512 megabytes

A permutation of length n is a sequence of n integers in which every integer from 1 to n appears exactly once. For a permutation $p_1, p_2, \ldots, p_n$ of length n, let q_i denote the position where i appears, i.e., $p_{q_i} = i$. If for every $i = 2, 3, \ldots, n-1$ we have $(q_i - q_{i-1})(q_i - q_{i+1}) > 0$, then the permutation $p_1, p_2, \ldots, p_n$ is called a *turning permutation*.

Now given n and k, you need to find the k-th lexicographically smallest turning permutation of length n, or report that the number of turning permutations of length n is less than k.

To determine which of the two permutations of length n is lexicographically smaller, we compare their first elements. If they are equal, we compare the second, and so on. If we have two different permutations x and y of length n, then x is lexicographically smaller if $x_i < y_i$, where i is the first index at which the permutations x and y differ.

Input

The only line contains two integers n ($3 \le n \le 50$) and k ($1 \le k \le 10^{18}$), denoting the length of the permutation and the ranking position of the desired turning permutation in the lexicographically sorted list of all the turning permutations of length n, respectively.

Output

If the number of turning permutations of length n is less than k, output -1 in one line. Otherwise, output the k-th lexicographically smallest turning permutation of length n in one line.

Examples

standard input	standard output
`3 2`	`2 1 3`
`3 5`	`-1`
`4 6`	`3 1 2 4`
`4 11`	`-1`

Note

There are a total of 4 turning permutations of length 3, arranged in lexicographically ascending order: $[1,3,2]$, $[2,1,3]$, $[2,3,1]$, $[3,1,2]$. Therefore, for the first sample case, the 2nd lexicographically smallest turning permutation is $[2,1,3]$, and for the second sample case, the answer is -1.

There are a total of 10 turning permutations of length 4, arranged in lexicographically ascending order: $[1,3,2,4]$, $[1,3,4,2]$, $[2,1,4,3]$, $[2,4,1,3]$, $[2,4,3,1]$, $[3,1,2,4]$, $[3,1,4,2]$, $[3,4,1,2]$, $[4,2,1,3]$, $[4,2,3,1]$. Therefore, for the third sample case, the 6th lexicographically smallest turning permutation is $[3,1,2,4]$, and for the fourth sample case, the answer is -1.