

1081. Binary Lexicographic Sequence

Time limit: 0.5 second

Memory limit: 64 MB

Consider all the sequences with length ($0 < N < 44$), containing only the elements 0 and 1, and no two ones are adjacent (110 is not a valid sequence of length 3, 0101 is a valid sequence of length 4). Write a program which finds the sequence, which is on K -th place ($0 < K < 10^9$) in the lexicographically sorted in ascending order collection of the described sequences.

Input

The first line of input contains two positive integers N and K .

Output

Write the found sequence or -1 if the number K is larger then the number of valid sequences.

Sample

input	output
3 1	000

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