D. Set of Points

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Convexity of a set of points on the plane is the size of the largest subset of points that form a convex polygon. Your task is to build a set of n points with the convexity of exactly m. Your set of points should not contain three points that lie on a straight line.

Input

The single line contains two integers n and m ($3 \le m \le 100, m \le n \le 2m$).

Output

If there is no solution, print "`-1`". Otherwise, print n pairs of integers — the coordinates of points of any set with the convexity of m. The coordinates shouldn't exceed 10^8 in their absolute value.

Examples

input
4 3

output
0 0 3 0 0 3 1 1

input
6 3

output
-1

input
6 6

output
10 0 -10 0 10 1 9 1 9 -1 0 -2

input
7 4

output
176166 6377 709276 539564 654734 174109 910147 434207 790497 366519 606663 21061 859328 886001