Problem L. Labeled Points

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	512 mebibytes

Consider N points on the Cartesian plane. The points are labeled with positive integers from 1 to N. The points are special: for each point (x_i, y_i), the coordinates are positive integers, and the equality $x_i \bmod 2 = \lfloor y_i/2 \rfloor \bmod 2$ holds.

Your task is to select a sequence of K of those points with the following property: the distance between every pair of points from this sequence is not less than 2. Among all such sequences, find the one for which the sequence of the points' labels is lexicographically minimal.

Input

The first line of input contains two integers N and K ($2 \le K \le N \le 6000$). Each of the next N lines contains coordinates of a point: two integers x_i and y_i ($1 \le x_i, y_i \le 10^9$, $x_i \bmod 2 = \lfloor y_i/2 \rfloor \bmod 2$).

It is guaranteed that all given points are pairwise distinct.

Output

If it is impossible to select K points so that the distance between every pair of them is not less than 2, print -1. Otherwise, print K integers, one integer per line: the sequence with the desired property which is lexicographically minimal.

Examples

standard input	standard output
3 2 2 1 1 2 1 3	1 3
4 3 2 1 1 2 1 3 2 4	-1
5 3 5 7 5 6 6 8 20 20 4 8	2 3 4