Sadeep is playing the "Path Game". The "Path Game" is played on a 1\*(N+1) grid which is numbered from 0 to N. Some of the grid cells are marked as "unsafe". Sadeep must start at cell 0 and must end in cell N. Sadeep can never land on an unsafe square. (It is possible that cells 0 and N are also "unsafe"). If Sadeep is on cell x he cannot go beyond cell x+K. A "path sequence" is a sequence of arbitrary length with each of its entries being strictly positive integers less than or equal to K. We say a "sequence path" is "achievable" if Sadeep can start at cell 0 and end up in cell N by using jumps of length defined by the "sequence path" in order(All the jumps have to be used in the order defined by the "path sequence". Moreover, Sadeep must follow the previously mentioned rules). An “achievable sequence path” is “optimal” if it has the minimum number of entries and it is the lexicographically least among all such paths. Given N,K and the configuration of the grid(G) find the “optimal achievable path sequence”. G is a string of length N+1. G[i] = 1 if cell i is “unsafe” and G[i] =0 otherwise.

Constraints

1<= N <= 10000

1<= K <= 10000

|G| = N+1

Input

First line gives N, K separated by a space

Second line gives S

Output

If Sadeep cannot get to cell N safely print -1

Else print the optimal achievable path sequence on a single line separate by spaces