Problem Zalmoxis

Author: Tamio-Vesa Nakajima

To score one hundred points on this problem, two steps are necessary:

- First, one must create some supersequence of S that is also a ZalSequence. To do this, use a stack Q which is initially empty. Traverse the elements of S from left to right ; when considering an element *x*, while the element on the top of the stack is strictly smaller than *x*, insert elements equal to the element on the top of Q into the sequence, considering them before x. If the top element if equal to *x,* remove the top element, and set x to be x + 1. When the stack is empty or the top element of the stack is greater than x, add x to Q. When this process finishes, the stack might not be equal to [30]. In this case, add elements to the end of the sequence in the following way: while the stack is not [30], add the top of the stack to the end of S and also to Q and while Q has the top two elements equal, remove them and insert that value incremented by one in Q.
- Second one must make the sequence to have length N + K. We can do this by spliting the non-negative elements we have added in some way until this condition holds. There are many ways to do this; one way is to keep the elements of the sequence we built now in a linked list, and to keep a queue of nodes that we can split. We then continually split the elements in the queue, adding the new elements to the queue if necessary.