

PQSort(sequence, queue)

in: sequence to be sorted; priority queue used for sorting

out: sorted sequence with the same elements as sequence

pre: queue is empty; elements of sequence can be used as keys in queue

let n be the size of sequence

for $i = 0, \dots, n - 1$

loop-inv: queue contains $(\text{sequence}_0, \text{sequence}_0), \dots, (\text{sequence}_{i-1}, \text{sequence}_{i-1})$

 sequence contains $\text{sequence}_i, \dots, \text{sequence}_{n-1}$

 remove element_i from beginning of sequence

 insert $(\text{element}_i, \text{element}_i)$ in queue

for $i = 0, \dots, n - 1$

loop-inv: sequence is sorted

 elements of sequence are smaller than or equal to keys of queue

 sequence and queue together contain $\text{sequence}_0, \dots, \text{sequence}_{n-1}$

 remove minimal item (element, element) from queue

 insert removed element at end of sequence

return sequence

In the above, sequence_i is used to denote the i^{th} element of the original sequence (that is, sequence at input).