Programming exercise I

Remarks: Use linked lists in order to support the following operations:

1. $Push(S, x)$. Pushes a value $x$ into a stack $S$
2. $Pop(S, i)$. Gets a number $i$ and pops $i$ numbers of $S$
3. $Reverse(S)$. Reverse the priority of the elements in $S$ (you might want to apply recursion). If for example $S$ is a stack and $x$ was the last inserted, from now on $x$ is treated as the first inserted element.
4. $QUEUE(x, S)$. Declares that from this moment $S$ becomes and acts like a queue
5. $ENQUEUE(S, x)$. $DEQUEUE(S)$: adds and removes elements when $S$ is a queue.
6. $STACK(S)$. Makes $S$ into a stack
7. $Average(S)$. Returns the average of the numbers in $S$

For every operation state its running time.