10.2-3.

Implement a queue by singly linked list L. The operations Enqueue and Dequeue should still take $O(1)$ time.

Answer.

Queue-Empty(Q)
1   **if** $L.head$ == NIL
2   **return** TRUE
3   **else return** FALSE

Enqueue(Q, x)
1   **if** Queue-Empty(Q)
2       $Q.head = x$
3   **else** $Q.tail.next = x$
4   $Q.tail = x$
5   $x.next =$ NIL

Dequeue(Q)
1   **if** Queue-Empty(Q)
2   **error** "underflow"
3   **else**
4   **if** $Q.head$ == $Q.tail$
5          $Q.tail =$ NIL
6       $Q.head = Q.head.next$
7       $x = L.head$
8   List-Delete($L, L.head$)
9   **return** x