

## C-5.14

Maintain a `capacity` variable and a `elementCount` variable. Also maintain the variables `indexFirst` and `indexLast`.

Presuming that overflow doesn't occur, insertion at rank 0 involves inserting the element in array position `indexFirst - 1` if `indexFirst` is greater than 0. Otherwise it is inserted at `capacity - 1`. Then `indexFirst` is updated to reflect the array index the new element was inserted into.

Removal from rank 0 involves incrementing `indexFirst` mod `capacity`.

The array index of `elemAtRank( $x$ )` can be calculated by  $x + \text{indexFirst}$  mod `capacity`