Solution 1

```python
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# O(n) time | O(1) space - where n is the number of nodes in the Linked List
def shiftLinkedList(head, k):
    listLength = 1
    listTail = head
    while listTail.next is not None:
        listTail = listTail.next
        listLength += 1

    offset = abs(k) % listLength
    if offset == 0:
        return head

    newTailPosition = listLength - offset if k > 0 else offset
    newTail = head
    for i in range(1, newTailPosition):
        newTail = newTail.next

    newHead = newTail.next
    newTail.next = None
    listTail.next = head
    return newHead


# This is the class of the input linked list.
class LinkedList:
    def __init__(self, value):
        self.value = value
        self.next = None

```