Problem 2

1. For remove, O(n) time was used:

O(1) time to actually remove the first added element:

**int** valToRemove = tail.data;

and O(n) time to find the new “tail”:

**while**(i < numElements-2 & temp != **null**)

For getValue(int index), O(i) time was used:

**while**(i <= ind && temp != **null**)

This loops from 0 to the ith index of the data structure, so the time complexity is O(i).

2. add() takes O(1) time:

**if**(numElements == 0)

{

head.data = val;

tail = head;

numElements++;

}

**else**

{

Node temp = **new** Node();

temp = head;

head = **new** Node();

head.data = val;

head.next = **null**;

head.prev = temp;

numElements++;

}

Since no loops were used, and all these are just assignment statements the time complexity is O(1).