WIA1002/WIB1002 Data Structure

Tutorial: LinkedList

Question 1

a) Assume that a node class called Node<E> exist. Create two nodes called node1 and node2. Node1 contains alphabet 'a' and node2 contains alphabet 'z'. Also, create 2 references, head and tail. Let head points to node 1 and tail points to node 2.
b) Draw the nodes from (a).
c) Write a statement/code for node1 accessing the node2. Modify 1(b) to show this.
d) Create a new node, firstNode. Add this new node at the first location of all existing nodes. Draw these nodes.
e) If we have no information about the status of a linked-list, what are the conditions we need to consider to perform the operation in (d)?
f) Write a list of operations/steps/pseudocode needed to add the firstNode to the first location.
g) Write codes to assign the firstNode to the first location.
h) Repeat (d) – (f), for the following operations :
   i. addLast() – value of element, c
   ii. add(int index, E e) – value of element, d
   iii. removeFirst()
   iv. removeLast()
   v. remove(int index) – remove at index 1

Question 2

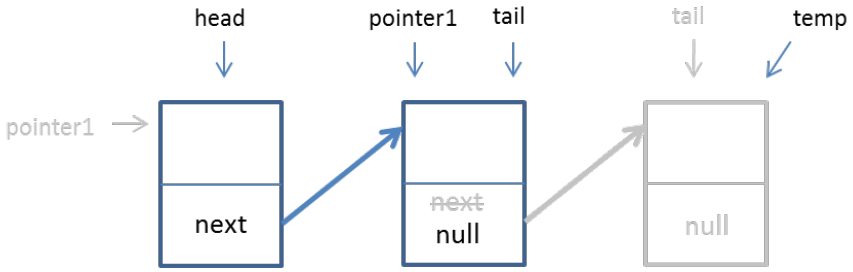
Given is a method containing incorrect statements that checks if an element is in a list.

```
public void operationX(E e) {
   pointerB.next = pointerB;

   for(int i++; i>size; int i) {
     System.out.println(current.element);
       if(current.element = e)
   }

   Node<E> pointerB = head;
   return false;
}
```

a) What is the name of the method for operationX?
b) Correct the statements by rewriting them in the correct order and syntax.Write the correct/right method name to replace operationX.

Question 3

Given the following nodes. Answer the following:



a) Based on the above figure, what is the name of the method for above operation?
b) Write codes to represent the above figure. (Kindly use the variables stated in the figure)