

Question 1

- a. Based on the above source code, explain what the lines of code do from line 10 – 21.

Else if:

This clause points the temp variable to the head variable. Afterwards, the program substitutes the element in the head with 'e'. The program then proceeds to return the element that was stored in the temp reference variable.

Else:

The for loop iterates through the lists and stops 1 node before the target node(index). Line 18 places the next node(Called TARGETNODE from here onwards) that the program stopped at into the reference variable temp. Line 19 then substitutes the element of the TARGETNODE with the 'e' inputted from the user. Line 20 returns the substituted element back to the method calling.

- b. What is the main purpose of the method xyz()?

Substitutes the element of the node at index l with a new element.

- c. Modify above source code to make it concise and simpler

```
public class Node<E> {  
    private E element;  
    private Node<E> next;  
  
    public E xyz(int index, E e) {  
        Node<E> current = head;  
        Node<E> temp;  
        if (index < 0 || index >= this.size()) {  
            return null;  
        } else { //removed the third else if clause  
            for (int i = 1; i < index; i++) {  
                current = current.next  
            }  
            temp = current.next;  
            current.next.element = e;  
            return temp.element;  
        }  
    }  
}
```

Question 2

- a) Explain what the lines of code do from line 2-11.

The temp reference variable points to the head.

The for loop on line 3 loops through the list and stops at the index that the user wants to stop at.

Line 6 puts the element of the node that is to be deleted.

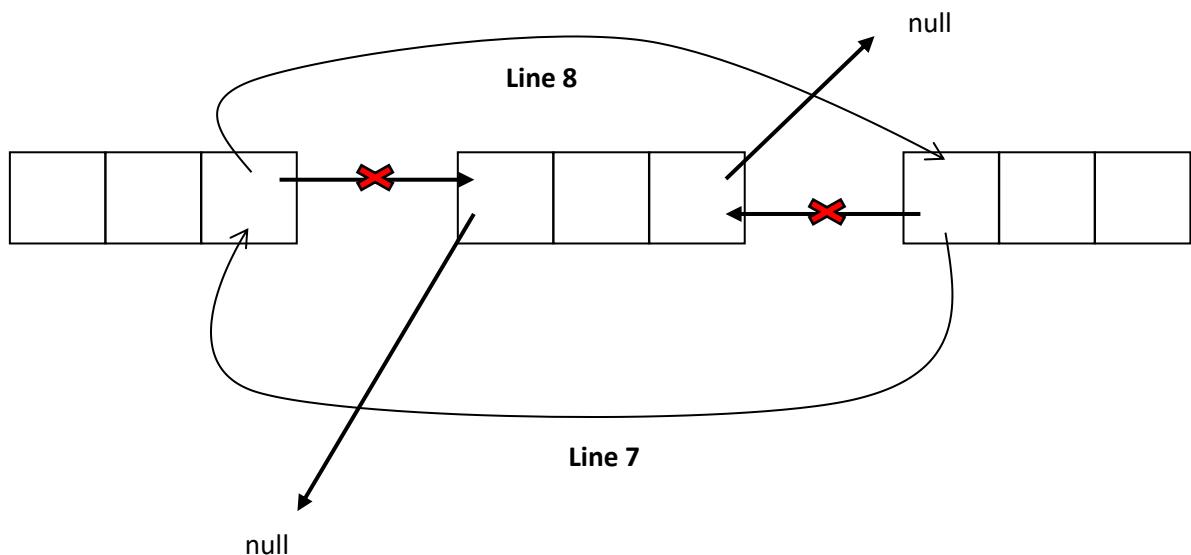
Line 7 points the (current node's next node's previous node) to the current node's previous node.

Line 8 points the (current node's previous node's next element) to the current node's next element.

Line 9 and 10 assigns null to the temp's next and previous nodes, therefore making it unreferable(deleting it)

Line 11 decreases the size of the doubly linked list.

- b) Draw the nodes for lines 7 - 10



Question 3

