Algorithm for inserting a node in a singly linked list

Algorithm insert (newNode,predecessor)

In: New node to be inserted after predecessor.

Out: {Insert newNode in linked list after predecessor; newNode is inserted at the front of the list if predecessor is null.}

```
if predecessor = null then {
    newNode.setNext(front)
    front = newNode
}
else {
    newNode.setNext(predecessor.getNext())
    predecessor.setNext(newNode)
}
```

```
/* Method to add newNode to the linked list after
   node predecessor.                                */
public void insert (LinearNode<T> newNode,
                     LinearNode<T> predecessor) {
    if (predecessor == null) {
        newNode.setNext(front);
        front = newNode;
    }
    else {
        newNode.setNext(predecessor.getNext());
        predecessor.setNext(newNode);
    }
}
```

Algorithm for deleting a node from a singly linked list

Algorithm delete (nodeToDelete)

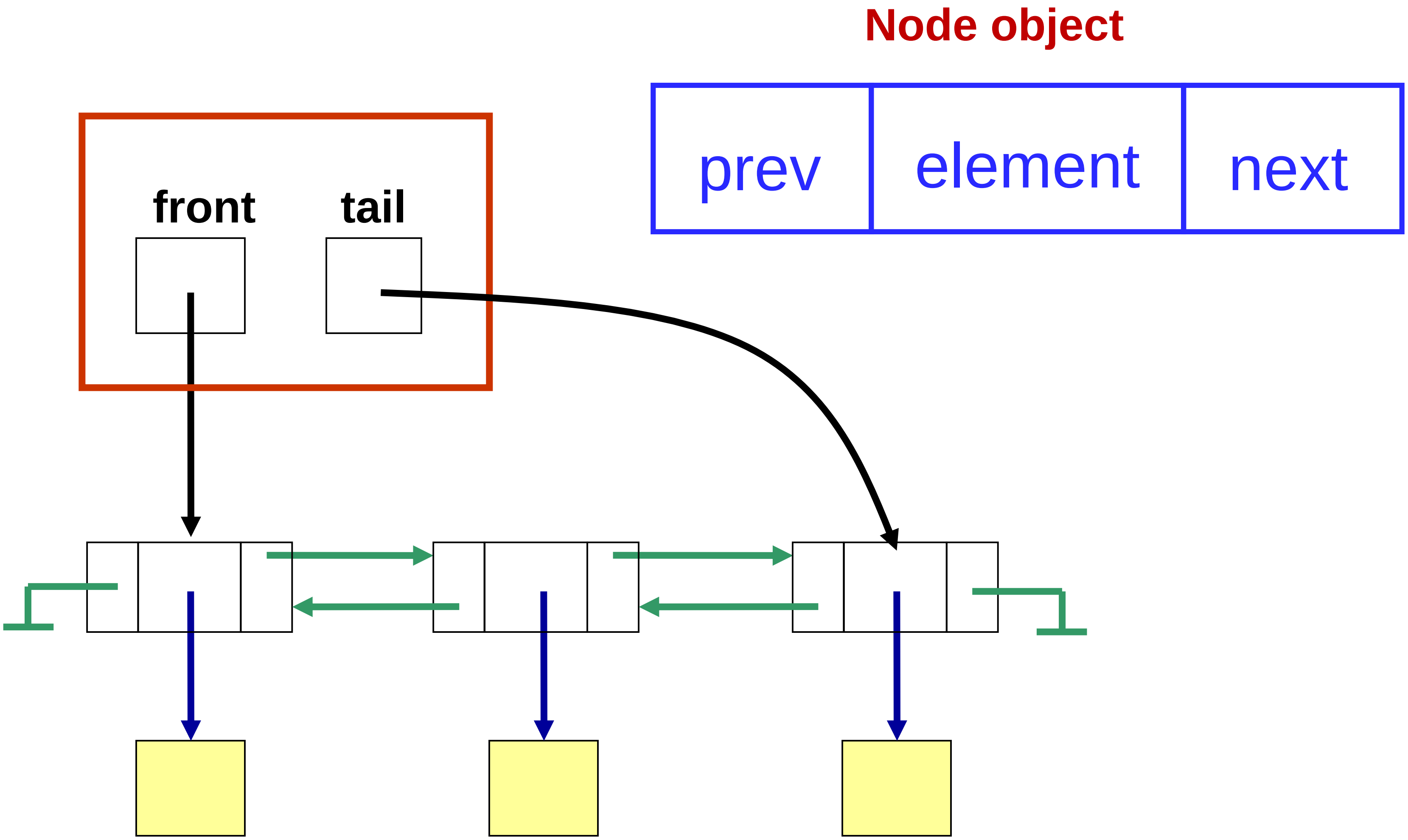
In: node to delete

Out: *true* if the node was deleted, *false* otherwise

```
current = front
predecessor = null
while (current != null) and (current != nodeToDelete) do {
    predecessor = current
    current = current.getNext()
}
if current = null then return false
else {
    if predecessor != null then
        predecessor.setNext(current.getNext())
    else front = front.getNext()
    return true
}
```

```
public boolean delete (LinearNode<T> nodeToDelete) {
    LinearNode<T> current, predecessor;
    current = front;
    predecessor = null;
    while ((current != null) && (current != nodeToDelete)) {
        predecessor = current;
        current = current.getNext();
    }
    if (current == null) return false;
    else {
        if (predecessor != null)
            predecessor.setNext(current.getNext());
        else front = front.getNext();
        return true;
    }
}
```

Doubly Linked List



Java Class for a Node of a Doubly Linked List

```
public class LinearNodeDLL<T> {
    private LinearNodeDLL<T> next;
    private LinearNodeDLL<T> prev;
    private T element;

    public LinearNode( ) {
        next = null;
        prev = null;
        element = null;
    }

    public LinearNode (T dataItem) {
        next = null;
        prev = null;
        element = dataItem;
    }
```