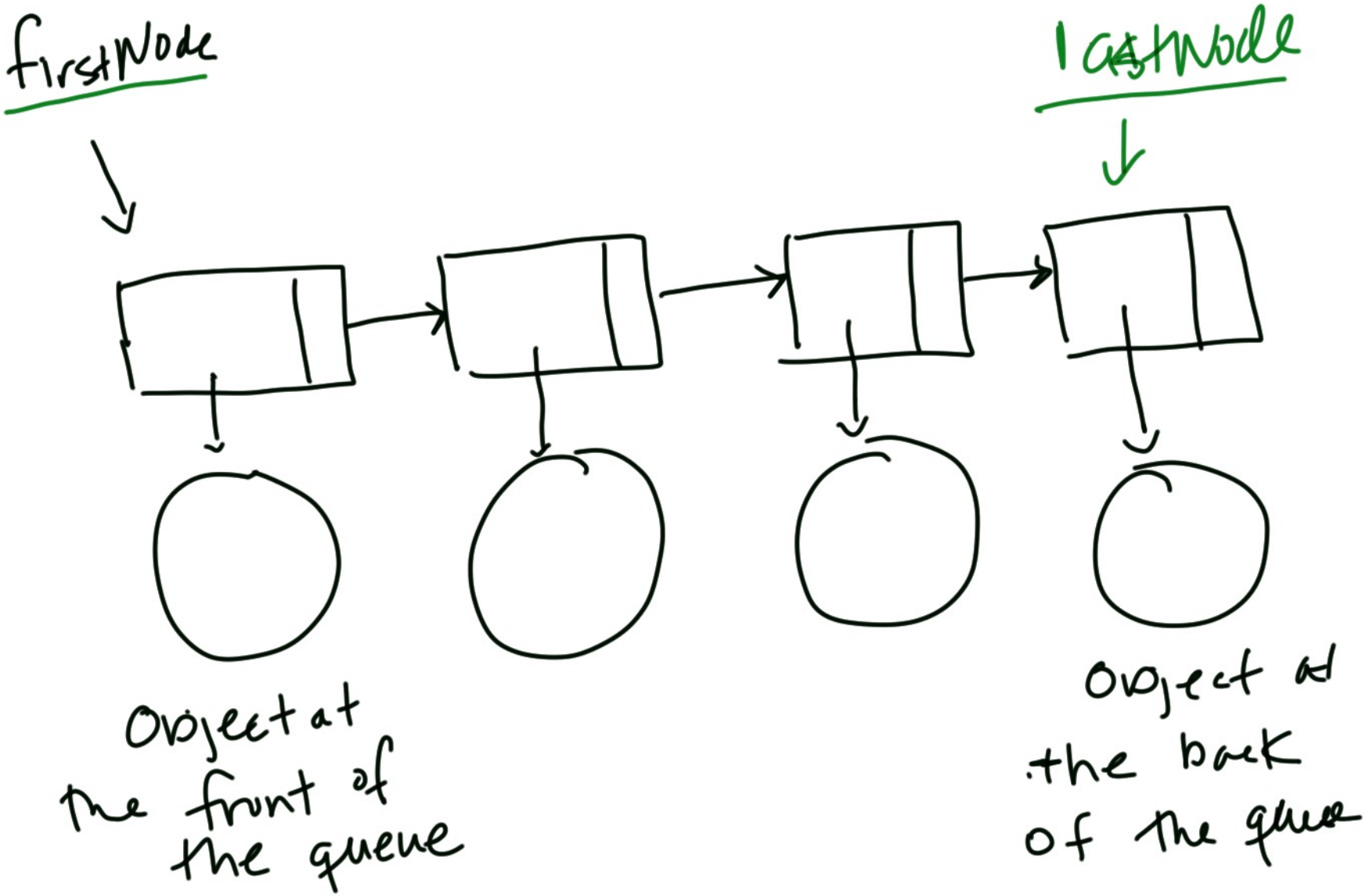
Queues


firstNode
lastNode
Object at the front of the queue
Object at the back of the queue

Linked Implementation of a queue

Notice there is a firstNode and lastNode reference

```
11 public class LinkedQueue<T> implements QueueInterface<T>
12
13     private Node firstNode;
14     private Node lastNode;
15
16     public LinkedQueue() {
17         firstNode = null;
18         lastNode = null;
19     }
```

.....

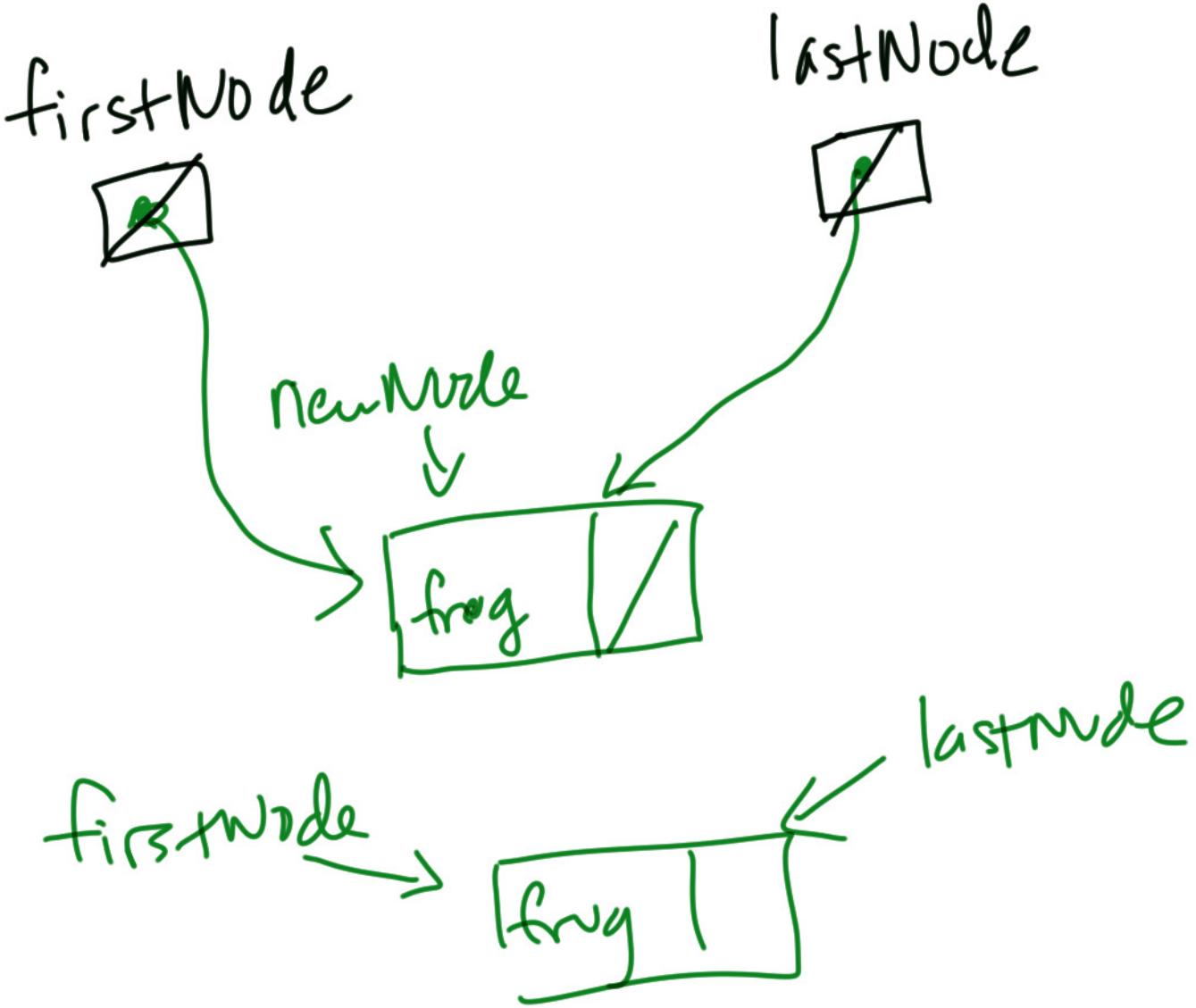
```
.....
71    private class Node
72    {
73      private T    data; // Entry in stack
74      private Node next; // Link to next node
75
76      private Node(T dataPortion)
77      {
78         this(dataPortion, null);
79      } // end constructor
80
81      private Node(T dataPortion, Node linkPortion)
82      {
83         data = dataPortion;
84         next = linkPortion;
85      } // end constructor
86
87      private T getData()
88      {
89         return data;
90      } // end getData
91
.....
```

Enqueuing, Add to the back

Performance is O(1) with use of lastNode reference

```
22    @Override
23    public void enqueue(T newEntry) {
24        Node newNode = new Node(newEntry,null);
25        if (isEmpty()) {
26            firstNode = newNode;
27        } else {
28            lastNode.setNext(newNode);
29        }
30        lastNode = newNode;
31    }
32
```

Enqueue to an empty chain



Enqueue to a non-empty chain