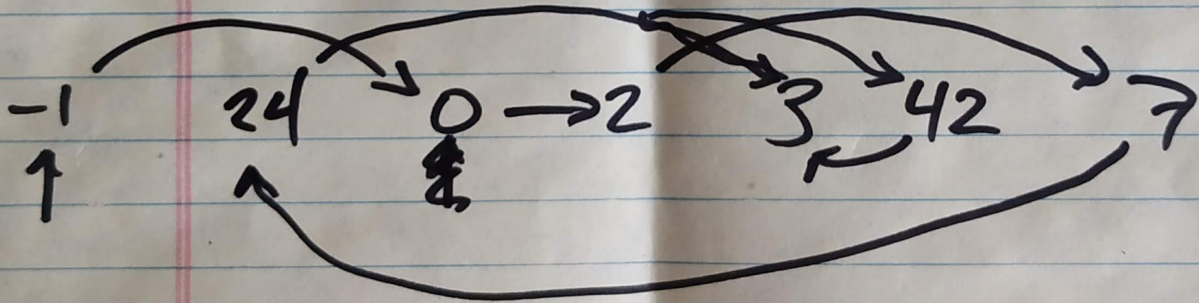


Linked Lists

- data
- reference to data

0	2	7	24	42	3
0	1	2	3	4	5

random access



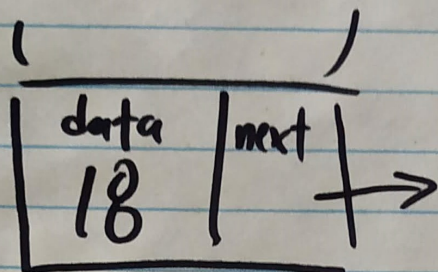
sequential access

Queue <Integer> q = new LinkedList<Integer>(X);

are number in
the list

reference to the
next node

reference
pointer
address
arrow
phone #



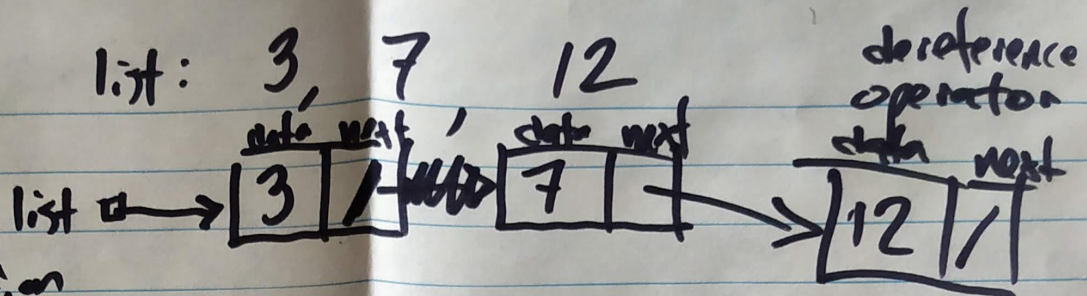
```
public class ListNode {
```

```
    public int data;  
    public ListNode next;
```

```
    public ListNode() {  
        this(0, null);  
    }
```

```
    public ListNode(int data) {  
        this(data, null);  
    }
```

```
    public ListNode(int data, ListNode next) {  
        this.data = data;  
        this.next = next;  
    }  
}
```

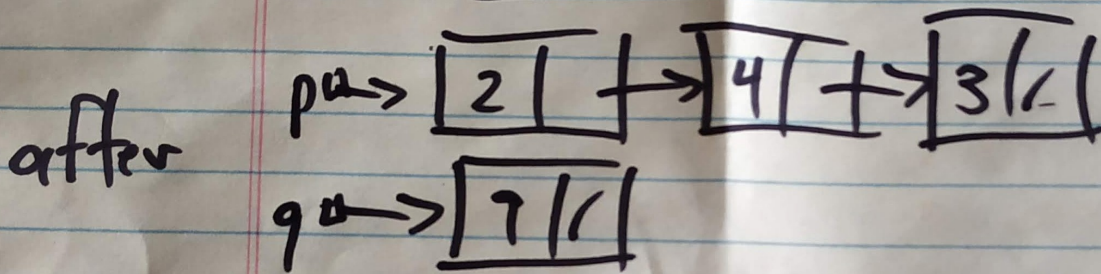
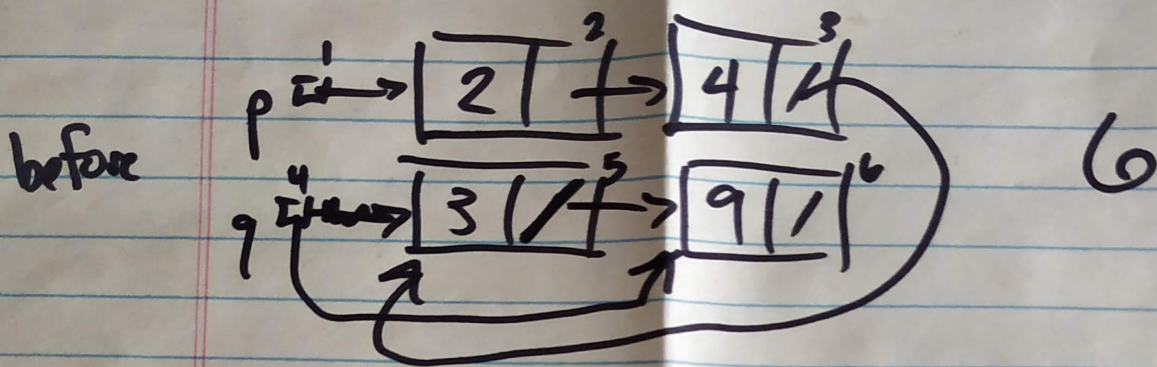
NullPointerException

```

ListNode list;
list = new ListNode();
list.data = 3;
list.next = new ListNode();
list.next.data = 7;
list.next.next = new ListNode();
list.next.next.data = 12;
list.next.next.next = null;

```

```
list.next = null;
```

3, 4, 5

$p.\text{next}.\text{next} = q;$

$q = q.\text{next};$

$p.\text{next}.\text{next}.\text{next} = \text{null};$