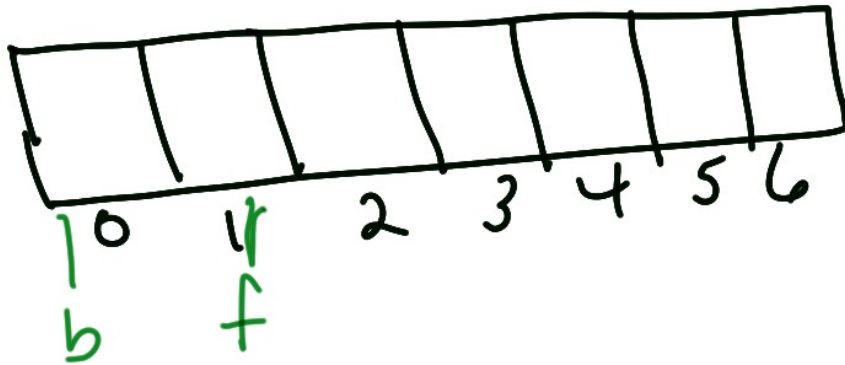
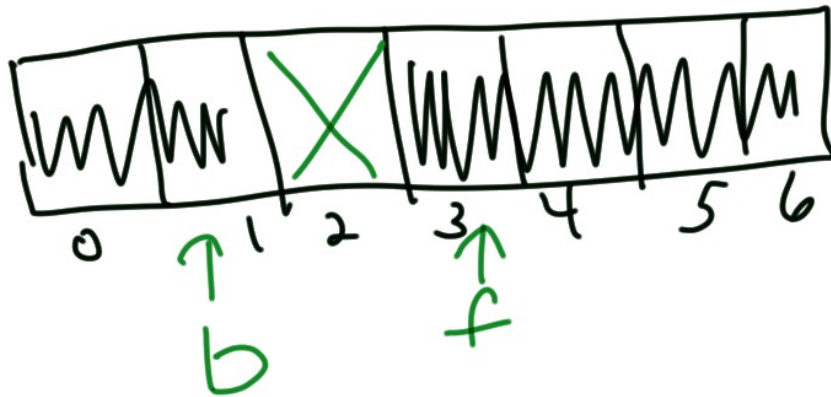


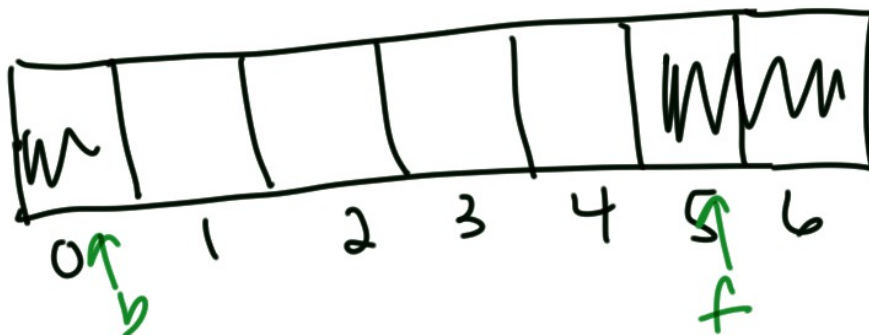
# Circular Array with One Unused Location



frontIndex      backIndex  
1                      0  
EMPTY



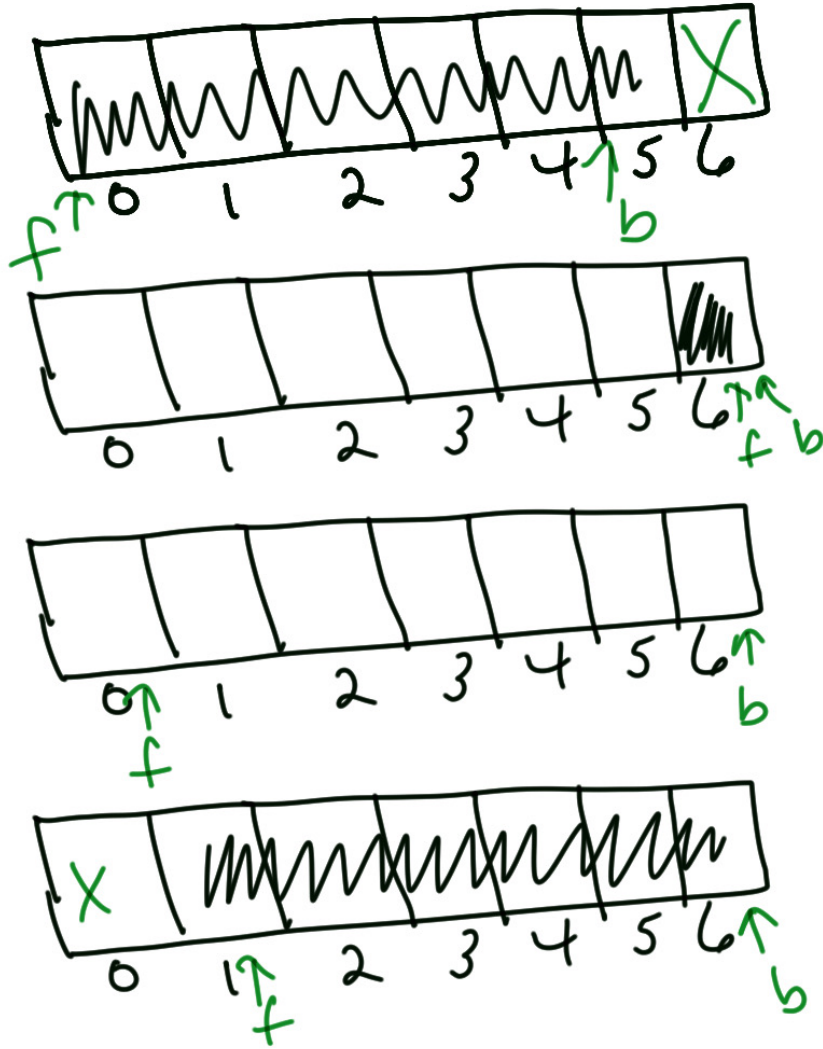
frontIndex      backIndex  
3                      1  
FULL



frontIndex      backIndex  
5                      0

$$(5+2) \% 7 = 0$$

$\uparrow$   $\uparrow$   
 $b$   $f$



<u>frontIndex</u>	<u>backIndex</u>
0	5
FULL	

<u>frontIndex</u>	<u>backIndex</u>
6	6
1 element	

<u>frontIndex</u>	<u>backIndex</u>
0	6
EMPTY	

<u>frontIndex</u>	<u>backIndex</u>
1	6
FULL	
$(6+2) \% 7 = 1$	

```
@Override
public T dequeue() {
    T front = getFront(); //may throw EmptyQueueException
    contents[frontIndex] = null;
    frontIndex = (frontIndex + 1) % contents.length;
    return front;
}
```

```
@Override
public T getFront() {
    if (isEmpty()) {
        throw new EmptyQueueException();
    }

    return contents[frontIndex];
}
```

