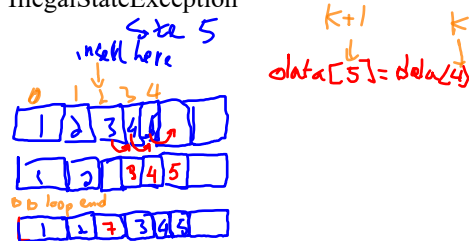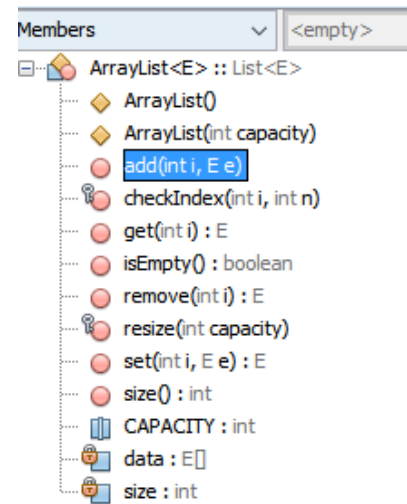C:\Users\Rich\Documents\NetBeansProjects\Lab06\src\ArrayList.java

```java
1
2 /**
3  * @author Goodwasser, Callissa, Maya
4  * code fragment 7.2 & 7.3
5  */
6 public class ArrayList<E> implements List<E> {
7     public static final int CAPACITY = 25;
8     private E[] data;
9     private int size = 0;
10
11   public ArrayList(){this(CAPACITY);}
12
13   public ArrayList(int capacity)
14   {
15       data = (E[]) new Object[capacity];
16   }
17   public int size(){return size;}
18
19   public boolean isEmpty(){return size==0;}
20
21   public E get(int i) throws IndexOutOfBoundsException
22   {
23       checkIndex(i,size);
24       return data[i];
25   }
26   public E set(int i, E e) throws IndexOutOfBoundsException
27   {
28       checkIndex(i,size);
29       E temp = data[i];
30       data[i] =e;
31       return temp;
32   }
33   public void add(int i, E e) throws IndexOutOfBoundsException, IllegalStateException
34   {
35       checkIndex(i, size+1);
36       if (size == data.length)
37           resize(2*data.length);      // if full double the capacity
38       for (int k = size -1; k>= i; k--)
39           data[k+1] = data[k];        //shifting right
40       data[i] = e;
41       size++;
42   }
43   public E remove(int i) throws IndexOutOfBoundsException
44   {
45       checkIndex(i, size);
46       E temp = data[i];
47       for (int k = i; k < size -1; k++)
48           data[k]= data[k+1];
49       data[size-1] = null;
50       size--;
51       return temp;
52   }
53
54   protected void checkIndex(int i, int n) throws IndexOutOfBoundsException
55   {
56       if ( i < 0 || i>= n)
```

Members dropdown: `<empty>`

ArrayList<E> :: List<E>
- ArrayList()
- ArrayList(int capacity)
- add(int i, E e)
- checkIndex(int i, int n)
- get(int i) : E
- isEmpty() : boolean
- remove(int i) : E
- resize(int capacity)
- set(int i, E e) : E
- size() : int
- CAPACITY : int
- data : E[]
- size : int

Handwritten annotations:
- // element replaced
- add (2, 7)
- insert here, size 5
- k+1, k, data[5] = data[4]
- diagrams of arrays: 1 2 3 4 5 / 1 2 3 4 5 / 1 2 7 3 4 5 (loop end)
- if list empty, evaluale will be false. Do loop won't execute (since size = 0)

```
57            throw new IndexOutOfBoundsException("Illegal index: " + i);
58    }
59    // resize the array to have capcity = size
60    protected void resize(int capacity)
61    {
62        E[] temp = (E[]) new Object[capacity];
63        for(int k = 0; k < size; k++)
64            temp[k] = data[k];
65        data = temp;
66    }
67
68
69
70 }
71
```

Handwritten note: Sina in class we can have
public void trim( )
then everything in the resize
method