

```

1  /**
2   lab skeleton
3   encapsulation / SuperArray
4
5   SuperArray is a wrapper class for an array.
6   - get/set by index
7   - get length
8   Adds functionality:
9   - dynamic capacity
10  - auto-grow capacity if necessary
11  */
12
13  import java.io.*;
14  import java.util.*;
15
16  public class SuperArray
17  {
18      //instance vars
19      private int[] data;          //where the actual data is stored
20      private int numberElements; //number of "meaningful" elements
21
22
23      // ~~~~~ CONSTRUCTORS ~~~~~
24      //overloaded constructor -- allows specification of initial capacity
25      public SuperArray( int size )
26      {
27
28      }
29
30      //default constructor -- initializes capacity to 10
31      public SuperArray()
32      {
33
34      }
35
36
37      // ~~~~~ METHODS ~~~~~
38      public void add( int value )
39      {
40          // test to see if we need to grow, then grow
41          // SIMPLE VERSION DOES NOT AUTO-GROW CAPACITY; INSERT MORE CODE HERE
42          • LATER
43
44          // add item
45
46          // increment numberElements
47
48
49      } //end add()
50
51

```

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52 public boolean isEmpty()
53 {
54
55 }
56
57
58 public int get(int index)
59 {
60
61 }
62
63
64 public String toString()
65 {
66
67 }//end toString()
68
69
70 //helper method for debugging/development phase
71 public String debug()
72 {
73     String s = "";
74     s = "Size: " + this.data.length;
75     s = s + " LastItem: " + numberElements + " Data: ";
76     for (int i = 0; i < numberElements; i++) {
77         s = s + data[i] + ", ";
78     }
79     s = s + "\n";
80     return s;
81 }//end debug()
82
83
84 private void grow()
85 {
86     // create a new array with extra space
87     // Q: How did you decide how much to increase capacity by?
88
89     // copy over all the elements from the old array to the new one
90
91     // point data to the new array
92     // Q: How does this look when illustrated using encapsulation diagram?
93
94 }//end grow()
95
96 }//end class
97

```