

## Model 1 ArrayList Methods

Open the [ArrayList documentation](#) to answer questions about the following methods. The data type “E” refers to the type of elements in the ArrayList (e.g., Integer).

| Return Type | Method                    | Description                                                                             |
|-------------|---------------------------|-----------------------------------------------------------------------------------------|
| boolean     | add(E e)                  | Appends the specified element to the end of this list.                                  |
| void        | add(int index, E element) | Inserts the specified element at the specified position in this list.                   |
| E           | get(int index)            | Returns the element at the specified position in this list.                             |
| E           | set(int index, E element) | Replaces the element at the specified position in this list with the specified element. |
| int         | size()                    | Returns the number of elements in this list.                                            |

### Questions (15 min)

Start time:

1. What value does the add method return?

```
true (as specified by Collection.add(E))
```

2. What value does the set method return?

```
the element previously at the specified position
```

3. What happens to existing elements when adding an element at a specified index?

```
Shifts the element currently at that position (if any) and any subsequent elements to the right (adds one to their indices).
```

4. What are the contents of nums after running the following code?

```
ArrayList<Integer> nums;  
nums = new ArrayList<Integer>();  
nums.add(74);  
nums.add(21);  
nums.add(0, 11);  
nums.set(1, 59);
```

```
[11, 59, 21]
```

5. The following program, found in *Model3.java*, uses an array of ints. Rewrite the program to use an ArrayList instead.

```
import java.util.Arrays;

public class Model3 {

    public static void main(String[] args) {
        final int N = 4;
        int[] nums = new int[N];
        for (int i = 0; i < N; i++) {
            nums[i] = i + 1;
        }
        for (int i = 0; i < N; i++) {
            nums[i] *= 5;
        }
        System.out.println(Arrays.toString(nums));
    }
}
```

```
import java.util.ArrayList;

public class Model3ans {

    public static void main(String[] args) {
        final int N = 4;
        ArrayList<Integer> nums = new ArrayList<Integer>();
        for (int i = 0; i < N; i++) {
            nums.add(i + 1);
        }
        for (int i = 0; i < N; i++) {
            nums.set(i, nums.get(i) * 5);
        }
        System.out.println(nums);
    }
}
```