

CS 149 Array Exercises

1. Draw the contents of memory after each of the following code snippets is executed. What will be printed by each?

(a)

```
int[] first = {1, 2, 3, 4};
int[] second;

second = new int[4];

second[0] = first[first.length - 1];
first[3] = second[1];

System.out.println(Arrays.toString(first));
System.out.println(Arrays.toString(second));
```

(b)

```
int[] first = {1, 2, 3, 4};
int[] second = {12, 15, 8};

first = second;

first[0] = 100;
second[1] = 200;

System.out.println(Arrays.toString(first));
System.out.println(Arrays.toString(second));
```

(c)

```
int[] first = {1, 2, 3, 4};
int[] second = {12, 15, 8};

first = Arrays.copyOf(second, 3);

first[0] = 100;
second[1] = 200;

System.out.println(Arrays.toString(first));
System.out.println(Arrays.toString(second));
```

2. The following two methods serve the same purpose:

```
public static int ex3(int[] numbers) {
    int x = 0;
    for (int number : numbers) {
        x += number;
    }
    return x;
}

public static int ex4(int[] numbers) {
    int x = 0;
    for (int i = 0; i < numbers.length; i++) {
        x += numbers[i];
    }
    return x;
}
```

(a) What do these methods accomplish? What would be an appropriate name for these methods?

(b) Which method is shorter? Which requires fewer variable declarations? Which requires fewer boolean expressions?

3. Implement the following two methods:

```
/** Return an exact copy of the provided array. (Don't use copyOf) */
public static int[] copyArray(int[] array) {
```

```
}
```

```
/** Return true if the provided array has any repeated entries. */
public static boolean containsDuplicates(int[] array) {
```

```
}
```