

0.

```
// constructs an empty list with the given capacity.
// precondition: capacity >= 0
public ArrayIntList(int capacity) {
    if (capacity < 0) {
        throw new IllegalArgumentException("capacity must not be negative");
    }
    elementData = new int[capacity];
    size = 0;
}
```

1.

```
public ArrayIntList runningTotal() {
    ArrayIntList newList = new ArrayIntList();
    System.out.println(newList);
    int sum = 0;

    for (int i = 0; i < this.size; i++) {
        sum += this.get(i);
        newList.add(sum);
    }

    return newList;
}
```

```
week03 > lab > J RunningTotalList.java > ...
1  package week03.lab;
2
Windsurf: Refactor | Explain
3  public class RunningTotalList {
    Run | Debug | Windsurf: Refactor | Explain | Generate Javadoc | X
4      public static void main(String[] args) {
5          ArrayIntList list = new ArrayIntList();
6          list.add(value: 2);
7          list.add(value: 3);
8          list.add(value: 5);
9          list.add(value: 4);
10         list.add(value: 7);
11         list.add(value: 15);
12         list.add(value: 20);
13         list.add(value: 7);
14         ArrayIntList list2 = list.runningTotal();
15         System.out.println(list);
16         System.out.println(list2);
17     }
18 }

PROBLEMS 41 OUTPUT DEBUG CONSOLE TERMINAL TEST RESULTS PORTS GITLENS
• duey@MacBook-Air-Duy CS211 % /usr/bin/env /Library/Internet\ Plug-Ins/JavaAppletPlugin
cp /var/folders/w3/0x9k0j1s65gczs9x9ztngbw0000gn/T/cp_b1gly17jggzf1hn5ifl2kq1xy.jar wee
[2, 3, 5, 4, 7, 15, 20, 7]
[2, 5, 10, 14, 21, 36, 56, 63]
○ duey@MacBook-Air-Duy CS211 %
```

2.

```
Windsurf: Refactor | Explain | Generate Javadoc | X
public int longestSortedSequence() {
    if (this.size == 0) {
        return 0;
    }

    int longest = 1;
    int count = 1;

    for (int i = 0; i < this.size - 1; i++) {
        if (this.get(i) <= this.get(i + 1)) { // <= for duplicates
            count++;
        }
        else {
            if (count > longest) {
                longest = count;
            }
            count = 1;
        }
    }

    if (count > longest) {
        longest = count;
    }

    return longest;
}

week03 > lab > J ArrayIntMain.java > ArrayIntMain > main(String[])
1 package week03.lab;
2
Windsurf: Refactor | Explain
3 public class ArrayIntMain {
    Run | Debug | Windsurf: Refactor | Explain | Generate Javadoc | X
4     public static void main(String[] args) {
5         ArrayIntList list = new ArrayIntList();
6         list.add(value: 1);
7         list.add(value: 3);
8         list.add(value: 5);
9         list.add(value: 2);
10        list.add(value: 9);
11        list.add(value: 7);
12        list.add(-3);
13        list.add(value: 0);
14        list.add(value: 42);
15        list.add(value: 308);
16        list.add(value: 17);
17        System.out.println(list.longestSortedSequence());
18    }
19 }
```

3.

```
public void removeFront(int n) {
    // shift remaining elements to the left by n
    for (int i = 0; i < n; i++) {
        elementData[i] = elementData[i + n];
    }

    size -= n;
}
```

```
Windsurf: Refactor | Explain
3 public class ArrayIntMain {
    Run | Debug | Windsurf: Refactor | Explain | Generate Javadoc | X
4     public static void main(String[] args) {
5         ArrayIntList list = new ArrayIntList();
6         list.add(value: 8);
7         list.add(value: 17);
8         list.add(value: 9);
9         list.add(value: 24);
10        list.add(value: 42);
11        list.add(value: 3);
12        list.add(value: 8);
13        System.out.println(list);
14        list.removeFront(4);
15        System.out.println(list);
16    }
17 }
18
19

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cp /var/folders/w3/0x9k0j1s65gczs9x9ztngbw0000gn/T/cp_bigly17jggzf1hn5ifl2kqlxy.jar v
[8, 17, 9, 24, 42, 3, 8]
[42, 3, 8]
duey@MacBook-Air-Duy CS211 %
```

4.

```
public void mirror() {
    ensureCapacity(size * 2); // checks if array is big enough to hold 2x size

    for (int i = size - 1; i >= 0; i--) {
        elementData[size] = elementData[i];
        size++;
    }
}
```

```
Windsurf: Refactor | Explain
3 public class ArrayIntMain {
4     Run | Debug | Windsurf: Refactor | Explain | Generate Javadoc | X
5     public static void main(String[] args) {
6         ArrayIntList list = new ArrayIntList();
7         list.add(value: 1);
8         list.add(value: 3);
9         list.add(value: 2);
10        list.add(value: 7);
11        list.mirror();
12        System.out.println(list);
13    }
14 }

PROBLEMS 41 OUTPUT DEBUG CONSOLE TERMINAL TEST RESULTS PORTS GITLENS
duey@MacBook-Air-Duy CS211 % /usr/bin/env /Library/Internet\ Plug-Ins/JavaAppletPlug
cp /var/folders/w3/0x9k0j1s65gczs9x9ztngbw0000gn/T/cp_b1gly17jggzf1hn5ifl2kqlxy.jar
[1, 3, 2, 7, 7, 2, 3, 1]
duey@MacBook-Air-Duy CS211 %
```

5.

```
// 5.
Windsurf: Refactor | Explain | X
public ArrayIntList fromCounts() {
    if (this.size / 2 == 1) {
        throw new IllegalArgumentException();
    }

    ArrayIntList newList = new ArrayIntList();

    for (int i = 0; i < this.size; i += 2) {
        if (this.get(i) < 0) {
            throw new IllegalArgumentException();
        }

        for (int j = 0; j < this.get(i); j++) {
            newList.add(this.get(i + 1));
        }
    }

    return newList;
}

4 public static void main(String[] args) {
5     ArrayIntList list = new ArrayIntList();
6     list.add(value: 5);
7     list.add(value: 2);
8     list.add(value: 2);
9     list.add(-5);
10    list.add(value: 4);
11    list.add(value: 3);
12    list.add(value: 2);
13    list.add(value: 4);
14    list.add(value: 1);
15    list.add(value: 1);
16    list.add(value: 1);
17    list.add(value: 0);
18    list.add(value: 2);
19    list.add(value: 17);
20    ArrayIntList list2 = list.fromCounts();
21    System.out.println(list2);
22 }

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cp /var/folders/w3/0x9k0j1s65gczs9x9ztngbw0000gn/T/cp_b1gly17jggzf1hn5ifl2kqlxy.jar
[2, 2, 2, 2, 2, -5, -5, 3, 3, 3, 3, 4, 4, 1, 0, 17, 17]
duey@MacBook-Air-Duy CS211 %
```