Directions: SHOW ALL YOUR WORK. REMEMBER THAT PROGRAM SEGMENTS ARE TO BE WRITTEN IN JAVA.

Notes:
• Assume that the interface and classes listed in the Java Quick Reference have been imported where appropriate.
• Unless otherwise noted in the question, assume that parameters in method calls are not null and that methods are called only when their preconditions are satisfied.
• In writing solutions for each question, you may use any of the accessible methods that are listed in classes defined in that question. Writing significant amounts of code that can be replaced by a call to one of these methods will not receive full credit.
This question involves identifying and processing the digits of a non-negative integer. The declaration of the `Digits` class is shown below. You will write the constructor and one method for the `Digits` class.

```java
public class Digits {
    /* The list of digits from the number used to construct this object.
       * The digits appear in the list in the same order in which they appear in the original number.
       */
    private ArrayList<Integer> digitList;

    /** Constructs a Digits object that represents num.
        * Precondition: num >= 0
        */
    public Digits(int num) {
        /* to be implemented in part (a) */
    }

    /** Returns true if the digits in this Digits object are in strictly increasing order;
        * false otherwise.
        */
    public boolean isStrictlyIncreasing() {
        /* to be implemented in part (b) */
    }
}
```
(a) Write the constructor for the `Digits` class. The constructor initializes and fills `digitList` with the digits from the non-negative integer `num`. The elements in `digitList` must be `Integer` objects representing single digits, and appear in the same order as the digits in `num`. Each of the following examples shows the declaration of a `Digits` object and the contents of `digitList` as initialized by the constructor.

**Example 1**

```java
Digits d1 = new Digits(15704);
```

```
d1:

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>5</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>
```

**Example 2**

```java
Digits d2 = new Digits(0);
```

```
d2:

<table>
<thead>
<tr>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

**digitList:** 0
Complete the Digits constructor below:

/** Constructs a Digits object that represents num.  
 *  Precondition: num >= 0  
 */
public Digits(int num)
(b) Write the `Digits` method `isStrictlyIncreasing`. The method returns `true` if the elements of `digitList` appear in strictly increasing order; otherwise, it returns `false`. A list is considered strictly increasing if each element after the first is greater than (but not equal to) the preceding element.

The following table shows the results of several calls to `isStrictlyIncreasing`:

<table>
<thead>
<tr>
<th>Method call</th>
<th>Value returned</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>new Digits(7).isStrictlyIncreasing()</code></td>
<td>true</td>
</tr>
<tr>
<td><code>new Digits(1356).isStrictlyIncreasing()</code></td>
<td>true</td>
</tr>
<tr>
<td><code>new Digits(1336).isStrictlyIncreasing()</code></td>
<td>false</td>
</tr>
<tr>
<td><code>new Digits(1536).isStrictlyIncreasing()</code></td>
<td>false</td>
</tr>
<tr>
<td><code>new Digits(65310).isStrictlyIncreasing()</code></td>
<td>false</td>
</tr>
</tbody>
</table>

WRITE YOUR SOLUTION ON THE NEXT PAGE.
Complete method isStrictlyIncreasing below.

```java
/** Returns true if the digits in this Digits object are in strictly increasing order;
 * false otherwise.
 */
public boolean isStrictlyIncreasing()
```