BuildString FRQ

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

Notes:

- Assume that the 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 generating a `String` based on a numeric value. You will write the `buildString` method of the following `Converter` class.

```
public class Converter
{
  /** Returns a String based on the single-digit integer num
   *  Precondition: num is a single-digit integer.
   */
  public static String convertToString(int num)
  {  /* implementation not shown */  }

  /** Returns a string based on an integer input value, as described in
  part (a)
   *  Precondition: input > 0
   */
  public static String buildString(int input)
  {  /* to be implemented in part (a) */  }

  // There may be variables and other methods that are not shown.
}
```

(a) The `buildString` method takes an integer value as input, obtains strings based on each digit of the input, and returns the concatenated strings.

A helper method, `convertToString`, has been provided. The `convertToString` method returns a string based on a single-digit integer input value. For example, the method call `convertToString(7)` might return the `String "paper"`.

The strings returned by `convertToString` should appear in the `String` returned by `buildString` in the same order that the digits appeared in the original input value.

For example, assume that the following calls to `convertToString` are made from within the `Converter`

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class and that `convertToString(1)` returns `"apple"`, `convertToString(2)` returns `"orange"`, and `convertToString(3)` returns `"banana"`.

Then the method call `Converter.buildString(3)` should return `"banana"`, the method call `Converter.buildString(123)` should return `"appleorangebanana"`, and the method call `Converter.buildString(321)` should return `"bananaorangeapple"`.

Complete method `buildString`. You must use `convertToString` appropriately to receive full credit.

```
/** Returns a string based on an integer input value, as described in
part (a)
 *  Precondition: input > 0
 */
public static String buildString(int input)
```

(b) A programmer wants to modify the `Converter` class so that the `buildString` method stores the value it returns so that the value is available to other methods in the `Converter` class. The programmer would like to implement this change without making any changes to the signature of the `buildString` method or overloading `buildString`.

Write a description of how you would change the `Converter` class in order to support this modification. **Do not write the program code for this change.**

Make sure to include the following in your response.

- Identify any new or modified variables or methods.
- Describe, for each new or revised variable or method, how it would change or be implemented, including visibility and type.