Prime Generator

Number theory is a branch of mathematics that has a number of important application, in particular in the development of cryptographic algorithms that are used to secure communcation over the internet. One important aspect of number theory is the study of *prime* numbers.

A positive whole number is called *prime* if it is not divisible by any number except by 1 and itself. Although many efficient and clever methods exist to determine whether a number is a prime, for this assignment you can use the straightforward approach of testing whether a number n is divisible by any whole number in the range starting at 2 and ending at $\sqrt{n}$ using a simple loop.

In this assignment you will implement a class `PrimeGenerator` that can be used to generate prime numbers of increasing size. Every time the `nextPrime()` method is called, the smallest number that is *strictly greater* than the current value should be returned. The returned value becomes the new current value of the `PrimeGenerator` object.

```
1  public class PrimeGenerator
2  {
3      public PrimeGenerator(int start) { ... }
4      public int nextPrime() { ... }
5      public void setStart(int value) { ... }
6  }
```

Example: Consider the following calls to a **PrimeGenerator** object:

```
1  PrimeGenerator generator = new PrimeGenerator(2);
2  for (int t=0; t < 3; t++)
3  {
4      int prime = generator.nextPrime();
5      System.out.println(prime);
6  }
7  generator.setStart(15);
8  System.out.println(generator.nextPrime());
```

This should print the numbers 3, 5, 7 and 17.

Aside from producing the correct output, your code should adhere to the following rules:

- All your instance variables need to be declared `private`.

- Every `public` method or constructor is required to have a Javadoc style comment.

- The Javadoc comment associated with the class itself must define an `@author` of the file.

Hints: For checking whether a number can be divided by another number you should use the modulo operator. It may be smart to create an additional method that can be used to check whether a given `int` is prime and returns the result as a `boolean` value.