```java
import components.simplereader.SimpleReader;

/**
 * Put a short phrase describing the program here.
 *
 * @author Isaac Frank
 *
 */
public final class Newton2 {

    /**
     * Private constructor so this utility class cannot be
  instantiated.
     */
    private Newton2() {
    }

    /**
     * Returns the approximate square root of x.
     *
     * @param x
     *            the input to calculate the square root of
     *
     * @return r, the approximate square root of x.
     */
    private static double sqrt(double x) {
        // Allows method to work for user input 0.0
        if (x == 0.0) {
            return 0.0;
        }
        double r = x;
        final double maxError = .0001;
        double error = Math.abs(r * r - x) / x;
        // r becomes the average of r and r/x until the error is
  within range
        while (error >= (maxError * maxError)) {
            r = (r + x / r) / 2;
            error = Math.abs(r * r - x) / x;
        }
        return r;
    }

    /**
     * Main method.
```

```
46      *
47      * @param args
48      *            the command line arguments
49      */
50     public static void main String[] args) {
51         // Opening input and output
52         SimpleWriter out = new SimpleWriter1L();
53         SimpleReader in = new SimpleReader1L();
54
55         String ans = "y";
56
57         // Loop to allow user to repeatedly calculate roots
58         while (ans.equals("y")) {
59             out.print(
60                     "Do you wish to calculate another square root?
   (enter 'y'): ");
61             ans = in.nextLine();
62             // Checking user input if 'y', then calling method with
   input x
63             if (ans.equals("y")) {
64                 out.print("Enter a double: ");
65                 double x = in.nextDouble();
66                 out.println("Approximate sqrt " + sqrt(x));
67             }
68         }
69
70         // Closing input and output streams
71         in.close();
72         out.close();
73     }
74
75 }
76
```