```java
import components.simplereader.SimpleReader;

/**
 * prompt users to type the number to find the square root of number, the
 * relative would be within 0.01%
 *
 * @author Yiming Cheng
 *
 */
public final class Newton1 {

    /**
     * Private constructor so this utility class cannot be instantiated.
     */
    private Newton1() {
    }

    /**
     * Computes estimate of square root of x to within relative error 0.01%.
     *
     * @param x
     *            positive number to compute square root of
     * @return estimate of square root
     */
    private static double sqrt(double x) {
        double r = x;
        /*
         * set r that is equal x as the initial value
         */
        double ε = 0.0001;
        while (Math.abs(r * r - x) / x > ε * ε) {
            r = (r + x / r) / 2;
            /*
             * calculate the right number of the square root within ε^2
             */
        }
        return r;
    }

    /**
     * Main method.
     *
     * @param args
     *            the command line arguments
     */
    public static void main(String[] args) {
        SimpleReader in = new SimpleReader1L();
        SimpleWriter out = new SimpleWriter1L();
        /*
         * Put your main program code here; it may call myMethod as shown
         */
        out.println("Calculate the square root of the number");
        String answer = in.nextLine();

        while (!(answer.equals("y"))) {
            out.println("Calculate the square root of the number");
            answer = in.nextLine();
        }

        out.println("Type a positive number");
        double number = in.nextDouble();
        /*
```

```
66          * get the right answer of the square root
67          */
68         out.println(sqrt(number));
69
70         /*
71          * Close input and output streams
72          */
73         in.close();
74         out.close();
75     }
76
77 }
78
```