

```
1 import components.simplereader.SimpleReader;
2 import components.simplereader.SimpleReader1L;
3 import components.simplewriter.SimpleWriter;
4 import components.simplewriter.SimpleWriter1L;
5
6 // DAVID PARK IS AUTHOR
7
8 public final class Newton1 {
9
10     private Newton1() {
11     }
12
13     private static double sqrt(double x) {
14         double guess = x;
15
16         double relativeError = 0.01;
17
18         double newGuess;
19
20         while (true) {
21             newGuess = 0.5 * (guess + x / guess);
22             if (Math.abs(newGuess - guess) < relativeError) {
23                 break;
24             }
25             guess = newGuess;
26         }
27         return guess;
28     }
29
30     /**
31      * Main method.
32      *
33      * @param args
34      *         the command line arguments
35      */
36     public static void main(String[] args) {
37         SimpleReader in = new SimpleReader1L();
38         SimpleWriter out = new SimpleWriter1L();
39         /*
40          * Put your main program code here; it may call myMethod as shown
41          */
42         out.println(sqrt(4));
43         out.println(sqrt(16));
44         out.println(sqrt(81));
45         out.println(sqrt(0));
46
47         in.close();
48         out.close();
49     }
50
51 }
52
```