```java
import components.simplereader.SimpleReader;
import components.simplereader.SimpleReader1L;
import components.simplewriter.SimpleWriter;
import components.simplewriter.SimpleWriter1L;
import components.utilities.FormatChecker;

/**
 * This program illustrates the charming theory.
 *
 * @author Ansh Pachauri
 *
 */
public class ABCDGuesser1 {
    /**
     * Repeatedly asks the user for a positive real number until the user enters
     * one. Returns the positive real number.
     *
     * @param in
     *            the input stream
     * @param out
     *            the output stream
     * @return a positive real number entered by the user
     */
    private static double getPositiveDouble(SimpleReader in, SimpleWriter out) {
        double num = -1.0;
        while (num <= 0) {
            out.print("enter a positive number: ");
            String input = in.nextLine();
            if (FormatChecker.canParseDouble(input)) {
                num = Double.parseDouble(input);
            } else {
                out.println("enter a positive number ");
            }
        }
        return num;
    }

    /**
     * Repeatedly asks the user for a positive real number not equal to 1.0
     * until the user enters one. Returns the positive real number.
     *
     * @param in
     *            the input stream
     * @param out
     *            the output stream
     * @return a positive real number not equal to 1.0 entered by the user
     */
    private static double getPositiveDoubleNotOne(SimpleReader in,
            SimpleWriter out) {

        double num = -1.0;
        while (num <= 1) {
            out.print("enter a positive number other than 1 ");
            String input = in.nextLine();
            if (FormatChecker.canParseDouble(input)) {
                num = Double.parseDouble(input);
            } else {
                out.println("enter a positive number ");
            }
        }
        return num;

    }

    /**
     * main program.
     *
     * @param args
     */
    public static void main(String[] args) {
        SimpleReader in = new SimpleReader1L();
        SimpleWriter out = new SimpleWriter1L();
        out.print("For the value of µ ");
        double mu = getPositiveDouble(in, out);
        out.print("For the value of w ");
        double w = getPositiveDoubleNotOne(in, out);
        out.print("For the value of x ");
        double x = getPositiveDoubleNotOne(in, out);
        out.print("For the value of y ");
        double y = getPositiveDoubleNotOne(in, out);
        out.print("For the value of z ");
        double z = getPositiveDoubleNotOne(in, out);
        double[] array1 = { -5, -4, -3, -2, -1, -1.0 / 2, -1.0 / 3, -1.0 / 4, 0,
                1.0 / 4, 1.0 / 3, 1.0 / 2, 1, 2, 3, 4, 5 };
        double a = 0, b = 0, c = 0, d = 0;
        double estimate = (Math.pow(w, a) * Math.pow(x, b) * Math.pow(y, c)
                * Math.pow(z, d));
        int i = 0, j = 0, k = 0, l = 0;

    while ((Math.abs(estimate - mu) / mu) > 0.01) {
      while ((i < array1.length)
          && ((Math.abs(estimate - mu) / mu) > 0.01)) {
        b = array1[i];
        estimate = (Math.pow(w, a) * Math.pow(x, b) * Math.pow(y, c)
            * Math.pow(z, d));
        i++;
        j = 0;
        while ((j < array1.length)
            && ((Math.abs(estimate - mu) / mu) > 0.01)) {
          b = array1[j];
          estimate = (Math.pow(w, a) * Math.pow(x, b) * Math.pow(y, c)
              * Math.pow(z, d));
          j++;
          k = 0;
          while ((k < array1.length)
              && ((Math.abs(estimate - mu) / mu) > 0.01)) {
            c = array1[k];
            estimate = (Math.pow(w, a) * Math.pow(x, b)
                * Math.pow(y, c) * Math.pow(z, d));
            k++;
            l = 0;
            while ((l < array1.length)
                && ((Math.abs(estimate - mu) / mu) > 0.01)) {
              d = array1[l];
```

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                            estimate = (Math.pow(w, a) * Math.pow(x, b)
                                    * Math.pow(y, c) * Math.pow(z, d));
                            l++;
                        }
                    }
                }
            }
        }
        out.println("the answer is " + estimate);
        double error = (Math.abs(estimate - mu) / mu) * 100;
        out.println("the value of a, b, c, d " + a + " " + b + " " + c + " " + d
                + "and the error percentage is " + error + "%");

    }

}

```