```
import java.text.DecimalFormat;

////////////////////////////////////////////////////////////////////////////
//                                                                        //
//   The following program calculates the square root of a number using a //
//                           binary search method.                        //
//                                                                        //
//                          WRITTEN BY:                                   //
//                                 ALAIN DADAIAN                          //
//                                                                        //
////////////////////////////////////////////////////////////////////////////

class Hw07
{
   //-----------------------------------------------------------------
   //  Calculates and returns the square root of a number using a
   //  binary search method.
   //-----------------------------------------------------------------
   private static double sqrt (double x, double tolerance)
   {
      double lo = 0.0, hi = x, mid = (lo + hi) / 2;

      for (int i = 0; Math.abs(hi - lo) >= tolerance; i++)
      {
         mid = (lo + hi) / 2;

         if ((mid * mid) >= x)
         {
            hi = mid;
         }
         else
         {
            if ((mid * mid) < x)
            {
               lo = mid;
            }
         }

      }

      return mid;
   }

   //-----------------------------------------------------------------

   public static void main(String[] args)
   {
      double x, tolerance = 0.0000001;
      String withSpacing1 = "", withSpacing2 = "";

      System.out.println("Written by Alain Dadaian");

      DecimalFormat fmt = new DecimalFormat ("0.000000");

      for (int i = 1; i <= 10; i++)
      {
         x = (double)i ;

         if ((i / 10) == 1)
            withSpacing1 = "       " + i;
         else
            withSpacing1 = "\t" + i;

            withSpacing2 = "\t" + fmt.format(sqrt(x, tolerance));

         System.out.println(withSpacing1 + withSpacing2);
      }

      System.out.println();

   }
} // end of the class Hw07

////////////////////////////////////////////////////////////////////////////
```