```
import java.awt.*;
import java.applet.Applet;

////////////////////////////////////////////////////////////////////////////
//                                                                        //
//            The following program make a Bifurcation Pattern.           //
//                                                                        //
//                              WRITTEN BY:                               //
//                                     ALAIN DADAIAN                      //
//                                                                        //
////////////////////////////////////////////////////////////////////////////

public class Bifurcation extends Applet
{

   public static double round(double a)
   {
      return a += 0.5;
   }

   public void init()
   {
      setBackground(Color.white);
   }

   public void paint (Graphics g)
   {

      int x_resolution = 799, y_resolution = 599;
      double r_low = 1.9, r_high = 3.0, p_low = 0.0, p_high = 1.4;
      double p_range = p_high - p_low, p, y, r;
      int n = 200;
      double r_range = r_high - r_low;
      double x_interval = (r_range) / x_resolution;

      g.setColor(Color.black);

      for (int x = 0; x < x_resolution; x++)
      {
         r = r_low + x_interval * x;

   p = 0.1;

   for (int i = 0; i < n; i++)
            p = p * ((1 + r) - r * p);

   for (int i = 0; i < n; i++)
   {
      p = p * ((1 + r) - r * p);

      if (p >= p_low && p <= p_high)
      {
         y = round(y_resolution * (p - p_low) / (p_range));
               g.drawRect(x, (int)y, 1, 1);
      }
   }
      }
   }
} // end of class Bifurcation

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