Programing Standards & Simple Data Plots

Computational Physics Lab

Project #3

Prof. Volker Crede

January 22, 2009 [due by January 29th]

Remember the *"Sierpinski Carpet"* from last week!

Part 1

Write a C++ program to generate (x, y) points according to the following rules:

```
 (x_new, y_new)                                              r

(0.5, 0.27*y)                                            for r<0.02
(-0.139*x+0.263*y+0.57, 0.246*x+0.224*y-0.036)           for 0.02<=r<=0.017
(0.17*x-0.215*y+0.408, 0.222*x+0.176*y+0.0893)           for 0.17<r<=0.3
(0.781*x+0.034*y+0.1075, -0.032*x+0.739*y+0.27)          for 0.3<r<1
```

   where **r** is a uniform random number in the interval [0,1). Use as starting values for your program (**x**,**y**) = (0.5, 0.0). Run the program, and plot your results. After plotting choose an appropriate name for your plot. Remember, when developing your program adhere to our programing standards. You can use your source code from part 1 as a starting point.

   Part 2

   Post this exercise to your computational physics website. Create a html page for Project 3. Create a link from your main project web page to this html page. This html page should include the following heading information: exercise (project) title, exercise number, your name, & today's date. The main content of this page should include the following:

   – a short description of the execise in Part 1
   – a link to the source code file
   – the text region which contains the actual source code text
   – the plot image

For your web images, make sure that the image is sized so that it reasonably fits on your html page. This can be done using the height and width options of the image html tag; example:

<IMG SRC="ex1_part1.jpg"   WIDTH=640 HEIGHT=480 >

For text regions use the html object tag; example:

<object width="600" height="400" type="text/plain" data="ex1_part2.cc" border="0" ></object>