Lab 1 — Introducing OpenGL

CS 320

Feb. 4, 2013

1. Refer to the screencast how-to on YouTube for a demonstration of creating a project, importing source files into, and designating libraries to be linked during compilation. These are the base libraries that we'll need for every project this semester:

   (a) `opengl32`

   (b) `glew32`

   (c) `freeglut`

2. Download and unpack the Sierpinski triangle archive from the class home page and unpack it.

3. Start Eclipse and create a new C++ project. With the exception of the `command` file, import all the files from the unpacked ZIP archive into your project.

   (By the way, that `command` file contains the Linux shell command for compiling this program.)

4. Add the three libraries listed above. Here's the drill-down sequence for getting to the settings page from which you can add the libraries:

   (a) Make sure your project is selected in the `Project Explorer` pane.

   (b) Open the `Project` menu and select `Properties`.

   (c) Expand `C/C++ Build`, and select `Settings`.

   (d) Select `Libraries` under `MinGW C++ Linker`.

   (e) Add your libraries.

   (f) You must be tired after all that, so take a break.

5. Compile and run the program. All should be well.

6. Modify the program to achieve the following:

   (a) Make the background color black.

   (b) Make the foreground color white.

   (c) Plot 100,000 points.

   (d) Instead of creating the Sierpinski gasket of a triangle, create the Sierpinski gasket of a pentagon. Use these five points as the pentagon's vertices: (50, 0), (0, 250), (250, 500), (500, 250), and (450, 0). Use this point as the initial point: (75, 50).

   Note: These points are defined for the clipping rectangle defined by the points (0, 0) and (500, 500). You are working with a clipping rectangle defined by the points (-1.0, -1.0) and (1.0, 1.0). You'll need to devise a simple mathematical formula for projecting a point from the larger clipping rectangle into the smaller clipping rectangle. Use the projected points in your program.