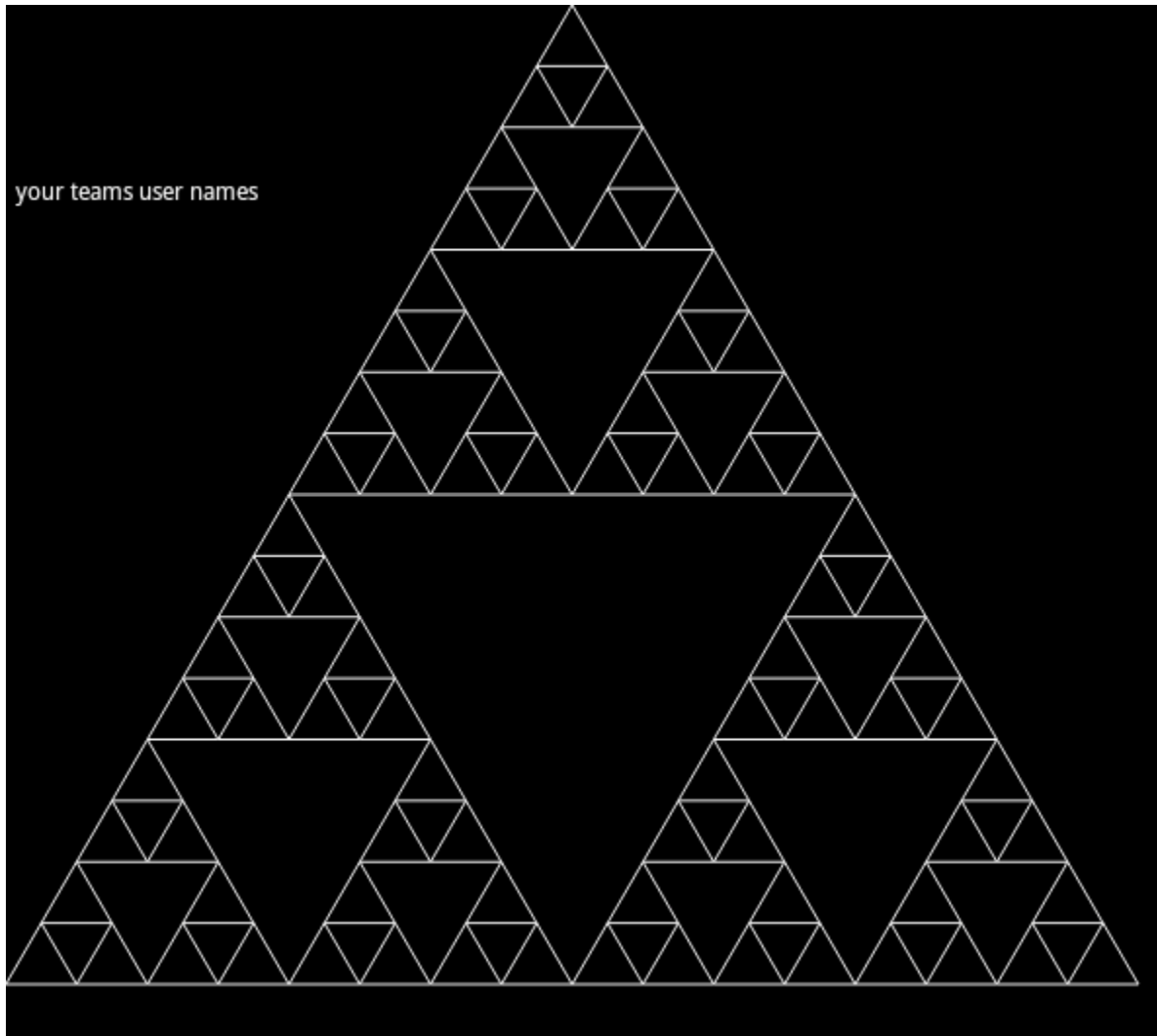# Lab 14 — Creating Fractals Using Recursion

Introduction

In this lab you will create a picture like the one above. You will be introduced to recursion and simple 2D drawing in Android. <mark>This is a team lab</mark>, so find someone to work with you.

Setup Your Development Environment

Note that these instructions apply specifically to the "Pod Lab", LWSN B148.
Before coding, you need to set up your working directory. Open the terminal and go into your cs180 directory. Inside the cs180 directory, create the lab14 directory

for this lab assignment.

For example, assume you are in your home directory(`/homes/your_login`):

```
% cd cs180
% mkdir lab14
% cd lab14
```

For this lab, use a command# similar to the following (replace "`YL`" by your login id) to setup your initial application:

```
% android create project -n Lab -t "android-10" -p . -k edu.purdue.YL.lab -a Main
```

Build and run your application to make sure everything is setup correctly. Your app should only display "Main, Hello world!" on the top right of the screen.
If there are any problems with setup please refer back to lab 9 on instructions of how to setup your initial application.

We have provided some starter code get you going. To get the provided code to work follow the steps below.

1. Download provided file.
2. Place file in src/edu/purdue/your_login/lab14/ folder relative to the lab14 directory. There should already be a Main.java file in the directory. Delete this file and replace it with the file provided.
3. Change the package declaration of the file to the "edu.purdue.your_login.lab14;".
4. Find the USERNAME variable with the DrawView class and set the variable to the the login ids of your team.

Recursive Triangle

Look over the comments to understand what the provided code is doing. You will only write the drawFigure method, which is in the DrawView class. The drawFigure method takes an integer, Canvas object, and three Point objects. The canvas object allows you to change "draw" on the Kindle. To see what is possible with the canvas class, follow the first link below. The Point class allows you to group x and y coordinates into one object variable. They also represent the three coordinates of a triangle. The level variable is used control the density of the triangles.

http://developer.android.com/reference/android/graphics/Canvas.html

Each call to drawFigure should decrease the level variable, send the same

canvas object as give, and create a smaller triangle with the three points given. Remember there must exist a base case. Use the level variable to create this base case. Once the base case is reached, use the canvas variable to draw a line between each of the three points and return from the function.

Grading
- 30% - Defined base case.
- 40% - Lines are drawn.
- 30% - Fractal triangle is drawn.