CS 150 Programming Assignment 8

Due Tuesday 11/8 @ Midnight

There are 4 questions, worth a total of 50 points.

All of your files must have exactly the filename listed in the assignment. Each file should have a comment at the beginning with your name and the date.

OurList.py

20 points

Implement two additional methods on the book's OurList class from Chapter 11. You need to implement the __le__(self,other) method and the pop(self,index) method. These are described in Exercise 11.9 and Exercise 11.11 respectively.

Sierpinski.py

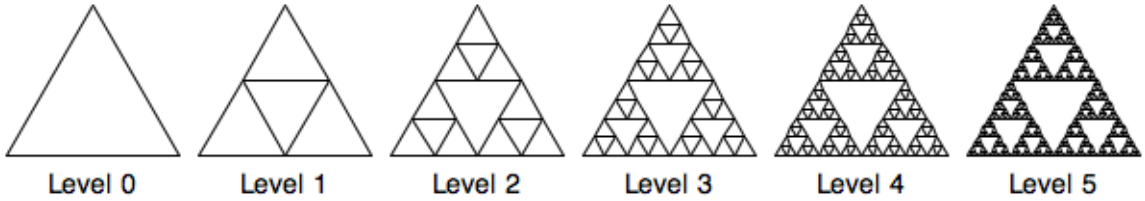
10 points

Create a class Sierpinski which is a child of the cs1graphics Drawable class. The constructor should have the following syntax:

```
def __init__(self, levels, p1, p2, p3)
```

and should create a Sierpinski triangle fractal with the given number of levels and corners given by the Points p1, p2, p3.

A level 0 Sierpinski triangle is just a triangle with the given vertices. A higher level Sierpinski triangle consists of three smaller triangles, each of which has one of the original vertices and two of the midpoints between p1, p2, p3.



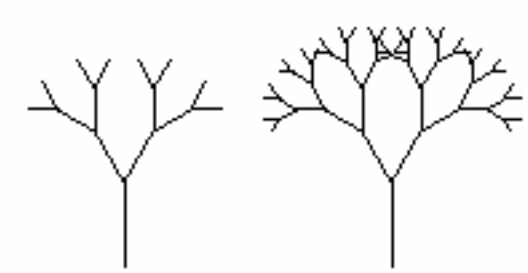
Tree.py

10 points

Create a class Tree which is a child of the cs1graphics Drawable class. The constructor should have the following syntax:

```
def __init__(self, levels, height = 32, angle = 30, scale = .7)
```

and should create a graphical tree. The tree has a trunk of the given height, which then branches into two smaller trees set at the top of the trunk at angles ±angle, and scaled by the given factor. This problem is similar to Exercise 11.6, although only the leftmost tree pictured in 11.6 is relevant.



Trees with default 30° angle and 0.7 scale,
with 4 levels and 6 levels, respectively.

DirTree.py 10 points

Write a program that asks for a directory name and then prints the complete list of all files below that directory in the filesystem, one per line. That is, you should list all files in that directory, the files in all of its subdirectories, and their subdirectories, and so on. Files in subdirectories should be shown indented to indicate how many subdirectory levels they belong to.

For example, in the listing below, there are directories called pa1,...pa6 with program files inside them, and inside pa6 is a directory called images with five pictures of a butterfly inside of it.

```
What directory to list?  Private/cs150-assignments
pa1
      circle.py
pa2
      ex3-10-airplane.py
      ex3-14-signal.py
      ex3-8-pine-trees.py
      pac-man-static.py
      random-picture.py
pa3
      bounce.py
      polystairs.py
      starstairs.py
pa4
      daleks.py
      drag.py
      piglatin.py
pa5
      Account.py
      Blood.py
      Buzz.py
      Fraction.py
      Pencil.py
pa6
      Arrow.py
      Blaster.py
      Butterfly.py
      Gun.py
      RegularPolygon.py
      Sprite.py
      images
            butterfly0.gif
            butterfly1.gif
            butterfly2.gif
            butterfly3.gif
            butterfly4.gif
```