CS1115 Lab 12 (November 21, 2013)

Completing the lab is very important, but your work is not graded and it is not submitted. If you finish before the hour is over, then you can leave early or you can work on the "Finished Early" problems. If you do not finish the problems before the end of class, then be sure to ask enough questions so that you can complete the exercises in the next day or two on your own.

1 Mondrian Tile Count

Download `MondTest` and `RandomMondrian`. Modify the codes so that the number of tiles is displayed in the title. No global variables!

2 Compare `Bin2DecI` and `Bin2DecR`

Download `ShowBin2Dec`. By using `tic` and `toc` and numerous examples of different length, compare the efficiency of `Bin2DecI` and `Bin2DecR`.

3 Recurring Squares

Write a recursive function `DrawSquares(a,b,s,L)` that can draw a "level-L punched square" with side s and lower left corner (a, b). For example,
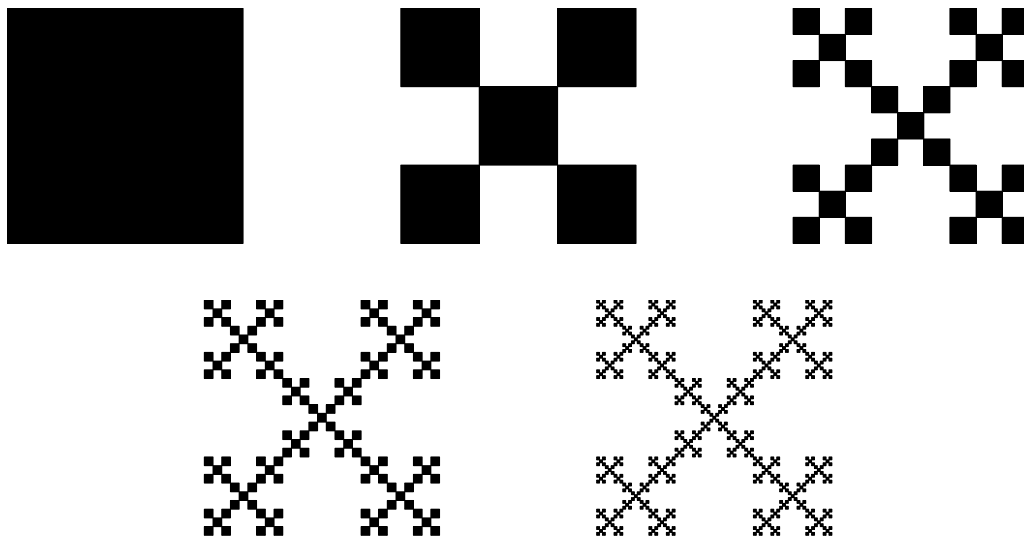
should be produced by `DrawSquares(0,0,1,0)` `DrawSquares(0,0,1,1)`, `DrawSquares(0,0,1,2)`, `DrawSquares(0,0,1,3)`, `DrawSquares(0,0,1,4)` respectively. The function should assume `axis equal off` and that `hold on`.

4 Finished Early?

Download `ShowDefIntegral` and study the adaptive trapezoidal `Area2` rule that you see there. Simpson's rule is given by

$$\int_L^R f(x)dx = \frac{R-L}{6}\left(f(L) + 4f(M) + f)R)\right) \qquad M = \frac{L+R}{2}$$

Write a recursive function `A = Area3(f,L,M,R,fL,fM,fR,tol)` that is based on this formula.