Program 1   12 points
Due: January 18, 2008 at 5 p.m.
Functions and Basic Variable Types in C

The purpose of this programming assignment is to familiarize the student with C syntax, the use of functions in C, and working with a variety of C variable types.

You are to write two C functions where all the formal parameters and the returned values are doubles:

1. A function that returns the $\log_2 (x)$.
2. A function that computes the Euclidean distance between two points in a two dimensional space. The function will take as input two points specified by the coordinates (x1,y1) and (x2, y2).

Main Assignment

This assignment is similar in flow to the Lab 1 program. Assume the first integer read with scanf specifies the number coordinate pairs to read in. Your program should only read in one pair each time scanf executes. However, the coordinates are to be read in as integers.

For each pair of points, compute and print out (using printf) the Euclidean distance.

After all the coordinate pairs have been read in, compute and print out the average Euclidean distance.

Finally, compute the $\log_2$ of the average Euclidean distance. In addition to printing out the double value of $\log_2$ of the average Euclidean distance, produce a horizontal bar graph of **ceil (**$\log_2$ (average Euclidean distance)).

What to turn in for Program 1

An official test file will be made available a few days before the due date. Turn in your assignment using the ***turnin*** program on the CCC machines. You should turn in a tarred file that includes your source code and a README file. Note, you may include a ***make*** file if you are already familiar with ***make.*** However, this is NOT a requirement for program 1 because the plan is to work with ***make*** in Lab 2.