

## Program 1

14 points

Due: January 24, 2014 at 8 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 but not quite the same as the input flow for **Lab 1** program. Assume the first integer read with **scanf** specifies the number of 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**.