CPE 412/512
Fall Semester 2010

Homework Assignment Number 6

From the Text:

a) A serial version of the windowing transformation of problem 3-4 is given in the file

http://www.ece.uah.edu/~wells/cpe412_512_fl_10/material/hw/hw6/display.cpp

for a 256 color windows bit map file. Using this as a reference, create two parallel implementations that evenly divide the workload among the process or threads. One implementation is to utilize MPI, the other implementation utilizes either pthreads, or OpenMP.

A reference 256 color image file can be found at

http://www.ece.uah.edu/~wells/cpe412_512_fl_10/material/hw/hw6/shut.bmp

Illustrate the correctness of your implementation by displaying the resulting output in a manner that illustrates both the translation and scaling transformations.

b) An example serial routine that outputs a mandelbrot set.is given at

http://www.ece.uah.edu/~wells/cpe412_512_fl_10/material/hw/hw6/mandelbrot.cpp

Note that this file requires that you load a reference 256 color windows bit map file to set up the color pallet. The “shut.bmp” file can be used in this case. The program then creates the mandelbrot plot using the “shut.bmp” files color pallet.Using this as a reference, create two parallel implementations that evenly divide the workload among the process or threads. One implementation is to utilize MPI, the other implementation utilizes either pthreads, or OpenMP.

Illustrate the correctness of your implementation by displaying the results of your parallel implementations. Specify the manner in which you divided the problem among the set of process or threads (dynamic, static, etc.). What are the advantages and disadvantages to your approach? Is your approach very scalable? Explain.

Due: October 28, 2010 -- DL students November 2, 2010

Homework Assignment Turn in Procedure

You are to turn in an electronic copy of the homework assignment on or before its due date. This copy should contain a printout of all source code and the resulting output of the program or some form of a log of interactive activity captured in a text file. Acceptable file formats include pdf, doc, and ascii text. All files should be sent as standard email attachments and should include all source level files and brief instructions as how to compile and execute your code. No object code files should be included. The subject line of the E-mail should contain the following; CPE x12, HW #num, where x is 4 or 5, representing which course you are taking (412 or 512) and num is the homework assignment number (Example CPE 412 student would put CPE 412, HW #1 for the first homework assignment. The E-mail is to be set to wellsbe@uah.edu.