Programming Assignment #1

Due Feb 9, 2020 by 11:59pm **Points** 4 **Submitting** a text entry box or a file upload
Available until Feb 10, 2020 at 11:59pm

This assignment was locked Feb 10, 2020 at 11:59pm.

This first programming assignment will focus on

- Ensuring you are comfortable with compiling and executing the software examples we have provided in class, and
- Give you some familiarity with bench-marking and evaluating performance of simple computational kernels

Your tasks are as follows:

- Select Two(2) of the nine benchmarks associated with the LaplacianStencil test (i.e. subdirectories LaplacianStencil/LaplacianStencil_0_XX, where XX = 0, 1, ..., 9)
- Ensure that both these tests can compile and run on your machine of choice (i.e. your personal computer, or a lab computer). You may use any machine you like, the absolute performance is not something that would influence your grade at all.
- For one of the two tests, run a comparative evaluation of executing the core for the ***entire range of numbers of cores***, ranging from just one core, to the maximum number of cores available at your machine (if your computer has more than 6 cores, feel free to sample just 6 different core counts, between one and the maximum available). Report the **best** peformance you were able to achieve, either in a table (in your README file), or in a chart (you can submit an image or a PDF, or Word file).
- For the other test, run 4 different sizes of the underlying grid where the Laplacian kernel is applied. You may do so by modifying the values "XDIM" and "YDIM". Comment on your results: Are they as you expected? Does the difference in size affect the performance accordingly?

Please turn in:

- Your code in a .zip file. Include any Makefiles/CMake files, or Visual Studio Project files (any platform is acceptable)
- A brief write-up with your findings. A text-based README is fine, as is a Word .doc file, or a PDF document.

Grading:

- You will be graded on a 0-3 scale (0 = very inadequate, 1 = quite problematic, 2 = buggy, or other minor issues, 3 = correct).
- A grade of 4 ("above and beyond") will be very rarely awarded for amazing work.