AMOD 5420H and COIS 4350H HPC Assignment 4:

# Theory Questions:

~500 words each

1. There are 3 main types of profilers: Event, instrumentation, and statistical. Compare advantages and disadvantages of each. I expect much more depth of discussion than I would get in COIS 2300H were we ask the same question (keeping in mind that we now also have a heterogeneous networked environment unlike in 2300H).
2. Describe various parameters you would investigate when evaluating the performance of a file system and storage configuration. (This ties into a programming question). (It may be interesting to specifically consider how this might matter if you were comparing say Zfs, BTRFS and ReFS).

# Programming Questions.

Note: While it would, in principle, be nice to have you write a program that requires an accelerator (GPU) there’s too much variety in hardware capabilities and not enough in lab resources for us to give you that, so I don’t have a question on that. It’s in the projects if you want to go that route.

1. Use VampirTrace (or score-p if it doesn’t want to behave for you) or Google profiler to profile one of your applications either in this course or from another (note that since these are fairly simple programs it won’t show you much, but it’s something to say you are familiar with profiling). The point of this is just that you’ve seen how to profile an application, not that the results are particularly meaningful.
2. Write a simple benchmark application to test the performance of a relatively large (>100MB) file copy, and a simple test of repeatedly reading and writing from several dozen small files (< 1MB each). This is related of course to theory question 2, and feel free to improve on the experiment or visualise the results. (You can do this in python easily enough). Note: You can do this in windows or Linux or Native Mac OSX.