CS553 PROGRAMMING ASSIGNMENT 1

Design Documentation

Program Design:

CPU Benchmarking:

A CPU Benchmarking test was performed to find out the practical performance capabilities (in terms of GIOPS and GLOPS) of t2.micro instances of Amazon Web Services Elastic Compute 2 (AWS EC2). These metrics were obtained at various levels of concurrency (1,2 and 4 threads). The execution time for all these configurations, in addition to the number of float-point or integer operations performed, is used to calculate GLOPS and GIOPS. A standard LinPack benchmark was performed to compare both efficiencies.

Disk Benchmarking:

During read/write operations (more specifically reading from and writing to a disk) the disk speed is measured as a metric for disk benchmarking. For different block sizes of 1 Byte, 1 Kilobyte and 1 Megabyte, and different concurrency of 1 or 2 threads, the throughput (in MB/s) and latency (in ms) are calculated for both sequential access and random access, in an effort to compare the two in a practical setting.

Trade-offs and Possible Improvements to Design:

In the interest of simplicity, a more robust efficiency calculation is foregone. Instead of performing simple arithmetic operations, more complex operations may be performed as an improvement.