**Results Figures and Descriptions**

Figure 1 – Plot runtime for 5 configurations for each benchmark. Runtime is the total amount of time that each benchmark computation takes to execute. This will be shown in a bar graph where the horizontal axis lists each benchmark and the vertical axis represents runtime. Each benchmark will have 5 bars (one per configuration). This graph will show that the best configuration with modulo unrolling runs faster than the best configuration without modulo unrolling.

Figure 2 – Plot message count for 5 configurations for each benchmark. Message count is the total number of messages sent or received during the execution of the benchmark. This will be shown in a bar graph where the horizontal axis lists each benchmark and the vertical axis represents message count. Each benchmark will have 5 bars (one per configuration). This graph will show that the best configuration with modulo unrolling produces fewer messages than the best configuration without modulo unrolling.

Figure 3 – Plot the memory usage for 5 configurations for each benchmark. Memory usage is the size of the largest buffer of elements sent between locales. This will be shown in a bar graph where the horizontal axis lists each benchmark and the vertical axis represents memory usage. Each benchmark will have 5 bars (one per configuration). This graph will show that the best configuration with modulo unrolling results in a lower memory usage than the best configuration without modulo unrolling. – maybe we can just test this and assert results without a graph

How to actually measure memory usage

Size of buffer

Library to figure out the size of the heap malloc.h

Chapel memory statistics

Figure 4 – Input size stress test. Pick one benchmark from our suite of benchmarks. Pick the best configuration with modulo unrolling and the best configuration without modulo unrolling. Vary the input size of the benchmark and measure runtimes, keeping all other parameters constant. This graph will evaluate how modulo unrolling performs as input size scales. –using lots of memory

Figure 5 – Number of locales stress test. Pick one benchmark from our suite of benchmarks. Pick the best configuration with modulo unrolling and the best configuration without modulo unrolling. Vary the number of locales for the program and measure runtimes (or speedup compared to one locale), keeping all other parameters constant. This graph will evaluate how modulo unrolling performs as the number of locales scales.