COSC 480 – Lab #3
Parallel Design

*This lab may be worked on in pairs. You may code these if you wish, but I'm looking for pseudocode!

1.) Adding two matrices together is a fairly straightforward process. Assuming two matrices of equal dimensions, you add the corresponding pairs:

    {{1 , 2}, {3, 4}, {8, 2}} + {{7, 3}, {6, 4}, {7, 9}} = {{8, 5}, {9, 8}, {15, 11}}

    As you would expect, this can be easily parallelized. Write the pseudocode for this method.

2.) Prefix sum is a summation over an array, x, such that for each element of the new array, y[i], it is the sum of x[i] and every element previous to x[i]. For instance:

    x[] = {1, 4, 6, 3, 2, 8}
    y[] = {1, 5, 11, 14, 16, 24}

    While this seems like a problem that is only doable as a sequential method, it can be parallelized. Write the pseudocode for this method.

3.) In 201, we typically talk about the maximum contiguous subsequence sum (MCSS) as a problem that has multiple solutions of a variety of speeds. As a reminder, the MCSS of an array is the subsequence that gives the maximum sum, where each element is contiguous. For instance:

    a[] = {1, 3, -5, 6, 2, -3, 5}

    has a MCSS of 10 (elements a[3]-a[6], inclusive). Note, that this is different than the maximum subsequence sum of a, which would be the sum of all positive elements, or the largest negative element, whichever is larger. Design the parallel method to do this computation and write the pseudocode.

Submit your solution (only one submission per pair, one document), to Blackboard. Due 9/21 at 11:59pm.