HW2

Due: Mon., Apr. 1st

1. Write sequential and multi-core parallel programs for Mandelbrot Set. Measure the execution time as K changes from 1 to 4, and compute speedup and efficiency.

2. Do the same as Q1 for estimating PI.

3. Do the same as Q1 for the cellular automata problem. You need to do barrier actions.

4. We know that we can compute cos(x) using the Taylor series expansion. Answer the following questions on this method:
   - Write a sequential program that computes cos(x) for x = 0.0, 0.1, 0.2, ..., 14999.9, 15000.0 with three digits of precision. In other words, the Taylor series expansion should continue until \(|\text{term}/\text{sum}| < 0.001\) where term refers to the last term in the Taylor series and sum is the summation of all the terms expanded so far.
   - Convert the sequential program into an SMP parallel program (in pseudocode).
   - Calculate Speedup and Eff as K (number of processors) changes.