Lab Session 4

Submission deadline: Feb 25, 11:59pm

Please submit your lab results through CatCourses, including Makefile, source code and a short report (up to one page). For how to compile a pthreaded program and other information related to pthread, you may find this website useful for this lab session (https://computing.llnl.gov/tutorials/pthreads/).

1. Monte Carlo Estimation of PI

Implement a Monte Carlo estimation of PI based on Pthreads (see course slides) and output the value of Pi. Change the number of threads (4, 8, 16, and 32) and measure the execution time of your program.

Note: sample_points_per_thread must be sufficiently big. You can use 10,000.

Pi =4 * (total_hits) / (number_of_threads * sample_points_per_thread)

2. Bank account simulation

Download the bank account simulation code (bankAccount.h and bankAccount.c) from CatCourses. Build and run several times, for each of 2, 4, 8, 16 … threads, and check the output.
Read the code and identify the problem of the code. Fix the problem and explain your method.