CS331: Programming Language Lab

Assignment I: Java Concurrent Programming

Deadline: 11.55 PM IST, 26th January 2025

Part (A): Design and implement a java multithreaded program for approximating the following integration using composite Simpson 1/3 rule. The number of points should be > 10^6 and compute the value of integration using 4 to 16 threads. The number of threads should be one coomandline argument to the program. [[you may refer to any material for Simpson rule. https://www.math24.net/simpsons-rule/]]

$$\int_{-1}^{1} \frac{1}{\sqrt{2\pi}} e^{-x^2/2} dx$$

Part (B): Design and implement a java multithreaded program to compute matrix multiplication C=A x B. Assume both A and B are square matrices of row size N=1000. Initialize all the elements of both A and B matrix with a random number between 0 to 10. Compute both initialization and matrix multiplication computation using 8, 10, 50, 100 and 500 threads. The number of threads should be one command line argument to the program.

Submission Procedure:

- Upload your assignments code in the compressed folder (tgx/zip/gz) to MS team Grp_CS331-2025 before the deadline.
- **Please embed comments, how to run and required inputs properly in the code, or a separate readme file**
- Source code will be checked for plagiarism, which can detect variable/function name change, minor structure change (while loop to for loop, vice versa), code displacement/repositioning**.**
- **Plagiarism case leads to F grades for both source candidate and destination candidate**. Make your code different from the internet code if available freely.
- Evaluation will be on or before 29th January 2025. TA may prefer to evaluate infront of your deskop or their deskop. Detail of Evaluation schedule will be shared.