



Birla Institute of Technology & Science, Pilani

Pilani Campus

II SEMESTER 2024-2025 TAKE HOME EXERCISE-3

Course No.: CS F422

Course Title: Parallel Computing

Deadline: As per Canvas

Maximum Marks: 20M

Consider a square matrix stored in a 2D array in which integers (0-9) are stored. Use MPI to fulfill the following:

- (a) Goal is to create a histogram for row-wise averages.
- (b) Rows are distributed to processes.
- (c) Each process, for each row, computes $\text{ceil}(\text{average of elements})$ as avg_i in the row.
- (d) Avg_i is communicated by each process to all other processes so that every process can create a histogram. Bins for histogram are 0,1,2,3,4,5,6,7
- (e) Every process prints histogram to file `hit_<rank>.txt`

Files Expected: A tar file `<idno>_the3.tar` containing modified `_jacobi.c`, `makefile`, screenshots.

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