Ananiya Deneke - Gaussian report 5/10/23

To perform Gaussian elimination using pthreads, we can take advantage of the fact that each row of the matrix U can be processed independently of the other rows. Therefore, we can create a pthread for each row of the matrix U and have each pthread perform the same computations as the original serial code, but only for that row.

The program given to us accepts the width of the square matrix as the command-line parameter. The upper-diagonal matrix generated by the multi-threaded code is compared against the reference single-threaded result and if the solutions match within a certain tolerance, the application will print out “TEST PASSED” to the screen before exiting.

I tested the code for matrix sizes 512, 1024, and 2048

| Matrix sizes | Test Pass/Fail |
|---|---|
| 512 x 512 | Pass |
| 1024 x 1024 | Pass |
| 2048 x 2048 | Pass |