CSE 344 HOMEWORK 5 REPORT

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I created SIGINT handler in order to send SIGUSR1 to all of the threads to finish them when SIGINT signal occurs. Process reads both of the input files and stores them in 2 dimensional arrays. Then, creates nondetached threads with pthread_create() function, process waits for the threads to finish and return the values.Process collects the outputs from the threads and stores them in a 3 dimensional array. Values of this array are written to the output file.

Each thread begins with multiplying the matrices and stores them in the particular part of the multiplication matrix. Then, locks the mutex. If the current thread is the last thread that reaches that point then it broadcasts condition variable to signal all of the other threads. Else, the current thread waits condition variable for signal. After all of that, it unlocks the mutex and starts calculating 2D DFT for the multiplication matrix which is matrixC. In the and returns the certain part of the output matrix with a void pointer.

When all of the threads finish, process collects the returned values of the threads. Puts all of the returned matrices into a united matrix and writes that into the output file. All of the required prints are done at the required positions.

NOTES:

If m variable is greated than 2^n, it makes m equal to 2^n.

If m variable is not a power of 2, it makes m the greatest power of 2 which is smaller than m.

I tested my homework with various inputs. It performed correct.

If you try my homework with 1024x1024 matrices, it may take a while to execute. Since, the calculations are being done are O(n^4).