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Assignment 3

Title :- Multireading

Problem Statement :- Implement multireading for matrix multiplication using pthreads.

Theory :-

What is a thread ?

A thread is a single sequence stream with in a process.

What is the difference between process and thread ?

Threads are not independent like processes as a result threads shares with other threads their code section, data section and OS resource like open files and signals. But, like process, a thread has its own program counter (PC), a register set and a stack space.

Why Multithreading :-

Threads are popular ways of improving

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application through parallelism. Threads operate faster than processes due to :-

- Thread creation is much faster
- Context switching is faster
- Threads can be terminated easily
- Communication between threads is faster

POSIX Thread Libraries

- Based thread API for C/C++
- Allows to spawn a new concurrent process fl
- Most effective on multi-processor or multi-core systems
- Threads require less overhead than "forking" or spawning a new process because the system does not initialize a new system virtual memory space and environment for the proc

Algorithm

(1) Input matrix 1
(2) Input matrix 2
(3) Validate rows and columns for multiplication to be possible
(4) Create mxn threads
(5) Call thread function to calculate

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one element of resultant matrix multiplied

(c) Join the threads

(7) Display the resultant multiplication matrix

Conclusion :- I have successfully implemented multithreading for matrix multiplication using POSIX threads.

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