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Comps B

# Exp 4 report : Multithreading in C

Learnings: In this experiment, we learnt about threads in C. C programs can be parallelised by using threads, made using functions in the <pthread.h> library (short for POSIX threads). Pthreads can be created using the pthread_create() function, which starts a new thread using an object of the type pthread_t. Threads can run functions of return type void*, having at most one argument of type void*.

Functions like pthread_join() and pthread_exit() assist in control of the program. If multiple pthreads are operating on the same section of memory, a pthread_mutex_t can be used to lock the critical section so that it is only accessed by one thread at a time, ensuring consistency in the output of the program. The mutex (mutual extension) comes with function like pthread_mutex_lock() and pthread_mutex_unlock(). We used mutexes in the second part of the experiment.

Errors encountered: Unpredictable behaviour was observed at first when the same object was accessed by multiple threads without locking. All elements needed to be pointer type casted to pass them into pthreads, this also led to some errors.