CSE 312 /CSE 504 Operating Systems Spring 2021

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For this homework, firstly I translate the merge sort c code (in geeksforgeeks) into the assembly code with using godbolt. But I change thread functions with my own thread functions label. For example, in c code there is a pthread_create function is called. But in asm, I did jal threadCreate label. But this asm code is not running exactly true.

In syscall.h, I added create, join, exit, lock and unlock macros.

In syscall.cpp, I create a Thread struct. It holds : {
        threadID,
        Program counter,
        registers,
        thread_stack_seg,
        thread_stack_seg_h,
        thread_stack_seg_b,
        thread_stack_bot
}

Then I hold these thread informations in threadTable vector. For iterator, I create a thread vector iterator.

In thread_create syscall, I take the variables from like program counter, registers etc. and initialize the thread object. After that I put this thread struct to my vector.

In thread_Join syscall, I wait until just one thread left. Otherwise I put -1 to the register V0,

In thread_exit syscall, I initialize my vector iterator which I defined above to the begin + index. Index will be threadNumber -1. And I erase these thread from my vector.

To sum up, I did.
        thread_create,
        thread_join,
        thread_exit syscall,
        GTU_SPIMOS_1.s.

        But these programs doesn't run because I couldn't connect thread syscall to the asm file. I think it happens because of timerHandler but I couldn't figure out. So they don't give an error and you can check these codes but as I said they don't run.

I didn't do thread_mutex_lock, thread_mutex_unlock and GTU_SPIMOS_2.s