CS 416

1. Logic
   1. Mutex lock: The user level mutex locking mechanism uses a user implemented test and set. Because we control the scheduler, we don’t need to use assembly or the OS Test-and-Set function, so we implemented our own version of it, preventing a context switch during the atomic critical section of the condition variable. The mutex related methods are based on this. The functions will allow a blocked queue, so if a thread requests a resource it will enter a blocked queue, so that it will unblock when the resource is available and before any threads that enter the queue later.
   2. Create: The function will initialize a new thread, initializing the TCB structure and context, then add that thread to the scheduler, or create the scheduler and initialize the timer first if it is the first thread to run.
   3. Yield: Simply forfeits the CPU
   4. Exit: De-schedule, return some return value, and deallocate resources
   5. Join: Blocks until the completion of a specified thread and reaps the return value from it. The structures maintain a field that contains the threads joined on the current thread, to signal them when they can switch from blocked to ready and provide them with a return value.
   6. Scheduler: