CSSE 332 -- Operating Systems

Project Milestone 1

Name: _____

xv6 Theory

Please answer the following questions **after** reading Chapters 3 and 4 of the xv6 book.

Question 1. (15 points) Describe how the `fork` system call works in `xv6`. Understanding `fork` well is key to a smooth flight through this project.

Question 2. (10 points) Looking back at our interrupts lecture, and with insights from chapter 4, describe in-depth the process of context switching between one process and another in xv6. Make sure to mark references to the kernel code, or code snippets to support your answer.

RISC-V Theory

Please answer the following questions about procedures in RISC-V.

Question 3. (5 points) In RISC-V, how are arguments passed to a function? You can safely assume we have a limited number of arguments. You do not need to support a variable number of arguments.

Question 4. (10 points) As we saw with pthreads, each thread will start execution from a different place in the code. What register(s) would you need to manipulate to impact where your thread is going to start and where your thread will return to (if it does return) once it has completed its execution.

Your API

Please answer the following questions about the system calls you intend to create as well as the user-level API functions that you are to support.

Question 5. (5 points) In the answer box below, please list and describe (briefly) any system calls that you'd like to implement to support lightweight threads in `xv6`.

Question 6. (5 points) In the answer box below, please list and describe (briefly) what the user-level API to your threading library would be.