

Part 2

c)

There was no deadlock or livelock in any of the runs. For part a, since there were no semaphores, the TAs did access the shared memory at the same time. In some cases, the TAs marked the same question or changed the rubric at the same time, however, the program never froze or became stuck. Execution continued normally until the exam file with student number 9999 was loaded. For part b, there was also no deadlock or livelock. Each TA task, like exam loading, rubric editing, and question marking, was protected by one semaphore. Therefore, since each TA requests the semaphores in same order each time the conditions for a deadlock never simultaneously occur.

The process scheduling caused there to be a slight variance between runs, however, all the run had some common parts. Only TA 0 loaded the next exam to be marked, only one TA edited the rubric at a time for part b, questions were only marked by one TA at once, and when each TA detected the exam with the student number 9999 being loaded, they terminated correctly.