SYSC 4001 Assignment 3
Part 2c Report

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Part 2c Discussion

After running the program with different numbers of Teaching Assistants, no deadlock or livelock appeared. The processes continued running, moved through the marking steps, and reached the exam with student number 9999.

The execution order observed in the runs shows the TAs waiting at the start until all processes are ready. After that point, they move through reviewing the rubric, marking questions, and loading exams. The three semaphores used in the code control access to shared memory. The rubric semaphore limits access to rubric updates. The marking semaphore protects the corrected array. The loading semaphore controls access to the student identifier and the loading of the next exam.

The critical sections in the code are short, and each semaphore is released right after the needed update. The longer delays only occur outside the protected sections. The processes were able to take turns entering the protected regions when waiting on a semaphore.

When the file containing the value 9999 was reached, each process printed the expected message and exited based on the shared student identifier. The shared memory and semaphores were removed after all child processes finished.