SYSC4001 - Assignment 3 Part II Report
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https://github.com/zaineb-bh/SYSC4001_A3P2.git

Discussion:

The design solution satisfies all three requirements associated with the critical section problem. The critical section problem solution requirements are mutual exclusion, progress and bounded waiting, which were all met in the solution to part 2. Firstly, mutual exclusion is when only one process can be in the critical section at a time; this was satisfied by using semaphores in part 2b, around the TAs correcting the rubric one at a time. This ensured that only one TA could update the rubric at any point in time, preventing problems caused by more than one TA writing at the same time. Secondly, progress is made if there are no processes in the critical section, and the decision of which process will enter is not postponed by other processes doing non-critical work. This was satisfied in the solution to Part 2 because whenever the critical section is empty, any TA that needs to correct the rubric can proceed to the critical section without waiting, this means no process is blocked from entering the critical section unless there already exists a process inside and using the shared resource, the rubric. Finally, bounded waiting is when a limit is placed on how many times a process can enter the critical section before a waiting process is allowed to enter. Bounded waiting avoids starvation of a process. This was satisfied in Part 2 solution through the use of semaphores in Part 2b. Since access through semaphores is fair to all processes, each TA/process waits its turn, and no TA can pass the other as all have equal priorities, and since each TA holds the semaphore for one correction, every TA is guaranteed access, and therefore no starvation occurs. Overall, the solution to Part 2 satisfies the three requirements associated with the critical section problem: mutual exclusion, progress, and bounded waiting.

Outputs:

Part 2a:

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zaineb@Zaineb:/mnt/c/Users/zaine/Downloads/SYSC 4001/Assignment3/SYSC4001_A3P2$ gcc Part2a.c -o part2a
zaineb@Zaineb:/mnt/c/Users/zaine/Downloads/SYSC 4001/Assignment3/SYSC4001_A3P2$ ./part2a 3 20
TA 1: Loading exam1.txt for student 1
TA 2: Loading exam1.txt for student 1
TA 3: Loading exam1.txt for student 1
TA 2: No correction needed on rubric line 1: A
TA 3: Correction made to rubric line 1: A -> B
TA 1: Correction made to rubric line 1: B -> C
TA 3: No correction needed on rubric line 2: B
TA 1: Correction made to rubric line 2: B -> C
TA 2: No correction needed on rubric line 2: C
TA 3: No correction needed on rubric line 3: C
TA 2: Correction made to rubric line 3: C -> D
TA 1: Correction made to rubric line 3: D -> E
TA 1: No correction needed on rubric line 4: D
TA 2: Correction made to rubric line 4: D -> E
TA 3: Correction made to rubric line 4: E -> F
TA 1: No correction needed on rubric line 5: E
TA 2: Correction made to rubric line 5: E -> F
TA 3: No correction needed on rubric line 5: F
TA 3: Marked student 1 question 1
TA 2: Marked student 1 question 1
TA 1: Marked student 1 question 1
TA 2: Marked student 1 question 2
TA 3: Marked student 1 question 2
TA 1: Marked student 1 question 2
TA 3: Marked student 1 question 3
TA 2: Marked student 1 question 3
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TA 2: No correction needed on rubric line 5: P
TA 3: Marked student 18 question 1
TA 1: Marked student 17 question 2
TA 2: Marked student 19 question 1
TA 1: Marked student 17 question 3
TA 3: Marked student 18 question 2
TA 2: Marked student 19 question 2
TA 1: Marked student 17 question 4
TA 2: Marked student 19 question 3
TA 3: Marked student 18 question 3
TA 3: Marked student 18 question 4
TA 1: Marked student 17 question 5
TA 1: Loading exam20.txt for student 20
TA 2: Marked student 19 question 4
TA 1: No correction needed on rubric line 1: K
TA 3: Marked student 18 question 5
TA 3: All exams have been marked
TA 1: No correction needed on rubric line 2: O
TA 2: Marked student 19 question 5
TA 2: All exams have been marked
TA 1: No correction needed on rubric line 3: Q
TA 1: No correction needed on rubric line 4: N
TA 1: Correction made to rubric line 5: P -> Q
TA 1: Marked student 20 question 1
TA 1: Marked student 20 question 2
TA 1: Marked student 20 question 3
TA 1: Marked student 20 question 4
TA 1: Marked student 20 question 5
TA 1: All exams have been marked
All TAs finished marking.
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Part 2b:

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zaineb@Zaineb:/mnt/c/Users/zaine/Downloads/SYSC 4001/Assignment3/SYSC4001_A3P2$ ./part2b 3 20
TA 1: Loading exam 1
TA 2: Loading exam 2
TA 3: Loading exam 3
TA 2: Checked rubric line 1: A
TA 3: Corrected rubric line 1: A -> B
TA 1: Corrected rubric line 1: B -> C
TA 3: Checked rubric line 2: B
TA 1: Checked rubric line 2: B
TA 2: Corrected rubric line 2: B -> C
TA 2: Checked rubric line 3: C
TA 1: Checked rubric line 3: C
TA 3: Corrected rubric line 3: C -> D
TA 2: Checked rubric line 4: D
TA 1: Checked rubric line 4: D
TA 3: Corrected rubric line 4: D -> E
TA 1: Checked rubric line 5: E
TA 2: Checked rubric line 5: E
TA 3: Checked rubric line 5: E
TA 2: Marked exam 2 question 1
TA 3: Marked exam 3 question 1
TA 1: Marked exam 1 question 1
TA 2: Marked exam 2 question 2
TA 3: Marked exam 3 question 2
TA 1: Marked exam 1 question 2
TA 2: Marked exam 2 question 3
TA 3: Marked exam 3 question 3
TA 1: Marked exam 1 question 3
TA 2: Marked exam 2 question 4
TA 1: Marked exam 1 question 4
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TA 3: Marked exam 16 question 4
TA 2: Marked exam 17 question 4
TA 1: Marked exam 18 question 4
TA 3: Marked exam 16 question 5
TA 3: Loading exam 19
TA 2: Marked exam 17 question 5
TA 2: Loading exam 20
TA 3: Corrected rubric line 1: L -> M
TA 2: Checked rubric line 1: M
TA 1: Marked exam 18 question 5
TA 2: Corrected rubric line 2: K -> L
TA 3: Corrected rubric line 2: L -> M
TA 3: Corrected rubric line 3: J -> K
TA 2: Checked rubric line 3: K
TA 3: Checked rubric line 4: L
TA 2: Checked rubric line 4: L
TA 2: Checked rubric line 5: L
TA 3: Corrected rubric line 5: L -> M
TA 3: Marked exam 19 question 1
TA 2: Marked exam 20 question 1
TA 3: Marked exam 19 question 2
TA 2: Marked exam 20 question 2
TA 3: Marked exam 19 question 3
TA 2: Marked exam 20 question 3
TA 3: Marked exam 19 question 4
TA 2: Marked exam 20 question 4
TA 3: Marked exam 19 question 5
TA 2: Marked exam 20 question 5
All TAs have finished marking.
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