COMP3230 Principle of Operating System Assignment 02

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Part 7: Analysis

1. There are 3 agents in total. Why can’t we initialize the reader\_sem to 3? [5%]

Ans:  In this case, the reader\_count value cannot be guaranteed to be correct. 3 agents can all add 1 to reader\_count while reading critical section and cause inconsistency. Given unreliable reader\_count, we might not be able to release writer\_sem at appropriate time.

1. Explain why the synchronization scheme in Section 5 may lead to starvation of writers  in general sense. [5%]

Ans: The reader will only release writer semaphore if there are no reader semaphore reading critical section. If there are multiple readers reading critical section, then writer process might suffer from starvation because writer semaphore isn’t released.

1. Discuss, in qualitative terms, why best-fit is better than first-fit. Provide some  experiment results (screenshots) as evidence. [5%]

Ans: Best fit method left less vacant seats after termination compared to first fit method. Even though it takes longer time and more instructions for best fit to calculate the best reserve position, the seat utilization rate can be improved.

In the picture below, first fit takes 0.3377 sec to complete, best fit takes 0.5355 sec; however, in terms of seat utilization, best fit is much better ( 88 < 292 ) given the same random request.

