Operating Systems–II: CS3523
Spring 2019
Theory Assignment 1: Chapter 6, 7 from the book

Submission Date: 03/03/2019, 9:00 PM

1. Consider the semaphore based solution to producer-consumer bounded buffer problem that we discussed in the class. Please answer the following:
(a) What is the minimum that the semaphores *full* & *empty* can become? Please explain how.
(b) Similarly, what is the maximum that the semaphores *full* & *empty* can become? Please explain how.
(c) Please give the upper and lower bounds on the sum of *full* & *empty* in any given state.

2. In the class we discussed the solution to the reader-writers problem using semaphores. We saw that this solution can cause the writer threads to starve. Please develop an alternative solution in which neither the reader nor the writers will starve. For this you can assume that the underlying semaphore queue is fair.

3. Exercise 6.11 from the book.

4. Exercise 6.12 from the book.