EXERCISE #1

The following is the solution for “Producer & Consumer Problem” we built on February 15th (the one that prevents the race condition and spin-waits).

Problem: CFQ (Circular Fifo Queue)

BASE SOLUTION: “SOLUTION #2”

Assuming that we have only one producer and one consumer,

Question #1: Is it possible to eliminate “S” (mutex) semaphore?

(a) If yes, explain “how” and why is it OK?

(b) If no, explain why not?
**Question #2:** If it is possible to eliminate “S” (mutex) semaphore, is there any merit (advantage) in eliminating the semaphore?

(a) If yes, explain “why” (or “how is it an advantage”).

(b) If not, explain why not.

**EXERCISE #2**

For the same solution for the solution for “Producer & Consumer Problem” (shown for EXERCISE #1):

Assuming that we have more than one producer and more than one consumer,

**Question #1:** Is it possible to eliminate “S” (mutex) semaphore?

(c) If yes, explain “how” and why is it OK?

(d) If no, explain why not?

**Question #2:** If it is possible to eliminate “S” (mutex) semaphore, is there any merit (advantage) in eliminating the semaphore?

(c) If yes, explain “why” (or “how is it an advantage”).

(d) If not, explain why not.