

CSCI 114 Practice 3

2) Solution 3 to the too much milk problem is safe because it never enters a bad state. Each thread guarantees to buy milk if there is no milk and if any thread finishes before the other then they will be able to see that there is already milk bought or that a note was left that the other thread is going to get milk.

3) The first queue will be populated with 0-49 and then then the queue remove is run the first 20 elements will be removed and will end up printing out 20-49. The first queue is the only queue that will have a deterministic output since `thread_join` is never called on the second and third queue. This means that the second and third queues can do exactly what happens in the first queue and print out 20-49, or they will print out nothing, or it will print out random values. There is no guaranteed output for the second and third queues.

10) There is a limit that only a single writer may write at a time. In the case where the program can accept more readers (when a write is done), all of the readers are allowed to read, and it can be broadcasted to every reader. But by using a signal, it only notifies the next waiting writer to prevent conflicting writes.