Assignment 5:

Please check the uploaded code from below GitHub link:

MultiplexerLab/MultiThreading (github.com)

Please answer the below questions as per your understanding:

1. Is there any possibility of a deadlock occurring in this code? If so, under what conditions could it happen, and what could be potential solutions to avoid it?

2. The producer code limits the buffer size to **maxSize**, but what happens if the producer thread attempts to add an item when the buffer is already full? How is this situation handled?

3. The consumer code removes items from the buffer, but what happens if the consumer thread attempts to remove an item when the buffer is empty? How is this situation handled?

4. Both the producer and consumer use synchronization on the **buffer** object to ensure thread safety. What purpose does this synchronization serve, and why is it necessary?

5. The code uses **buffer.notifyAll()** to wake up waiting threads. Why is **notifyAll()** used instead of **notify()**? What could be the potential issues if **notify()** were used instead?