COP 5615 – DISTRIBUTED OPERATING SYSTEM PRINCIPLES (FALL 2016)

LAB # 01

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1. Following is the list of potential problems and faulty situations that may arise in a producer-consumer scenario without using any co-ordination or synchronization mechanisms:

    a. Producer is faster than the consumer and thus some of the data produced is getting lost, since consumer is not able to consume the data at the speed at which it is produced.

    b. Consumer is faster than the producer and thus consumer is trying to get data from an empty queue or buffer, since producer is not able to produce data at a faster rate.

    c. Also deadlock condition may arise, if both the producer and consumer enter wait mode and do not receive resume command.

    d. Also, since both the consumer and producer are sharing the same queue, if there is not synchronization, this may give rise to data inconsistency or data race condition.

2. The timing graph is as follow:
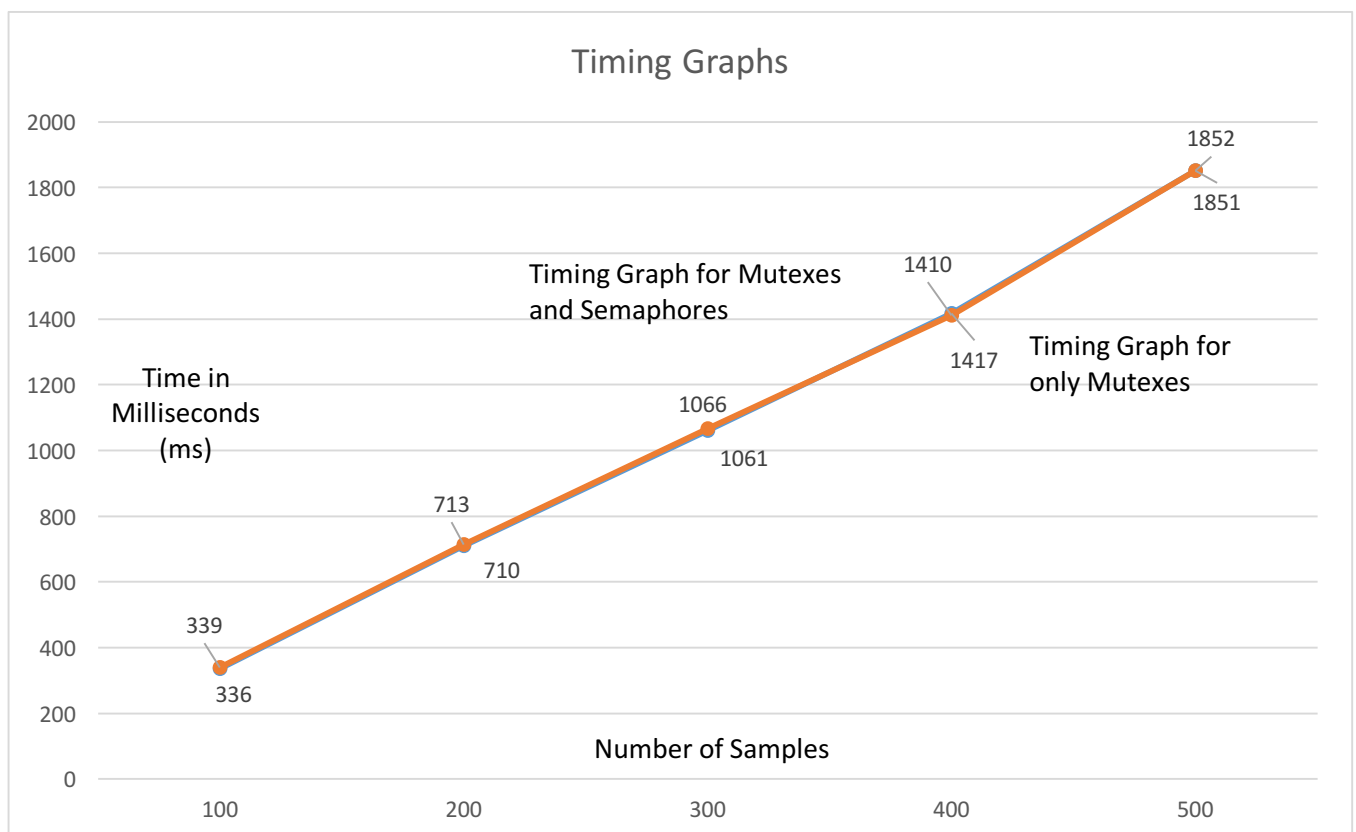
3. **Conclusion:**

    Thus, it can be concluded that, Mutex have a slight edge over Semaphores in terms of speed. Thus issues associated with Concurrent Programming can be eliminated by using Semaphores and Mutex. Mutex are to be preferred in a case where two processes are sharing a same Queue or Buffer.