**Assignment No.4**

**Write-up**

4. Thread synchronization using counting semaphores and mutual exclusion using mutex. Application to demonstrate: producer-consumer problem with counting semaphores and mutex.

* What is synchronization?
* Synchronization techniques:
  + Semaphores
    - General (counting)
    - Binary
  + Mutex
* Semaphore primitives:
  + sem\_init()
  + sem\_wait()
  + sem\_post()
  + sem\_destroy()
  + sem\_t
* Mutex primitives:
  + pthread\_mutex\_init()
  + pthread\_mutex \_lock()
  + pthread\_mutex \_unlock()
  + pthread\_mutex \_destroy()
  + pthread\_mutex \_t
* Pseudo code of Producer and Consumer from William Stallings (2nd solution)

**Note:** Write prototypes of all primitives as well.