PART A:
I WILL NOT GRADE THIS PART BUT THE QUESTIONS MIGHT BE IN THE EXAM

1. [SH]: 6.6: problem 1, 4 (page 205).
*a) Program 6.4 has a binary semaphore **s**, local to each node. Why is it necessary?*
*b) Suppose that the binary semaphore **s** is deleted from the method **replyToDefferedNodes** and the **V(s)** in thread **handleRequests** is moved up just before the **if** statement. Show that a **deadlock** is possible.*
*c) Does the **V(s)** in **replyToDefferedNodes** need to be moved to the end of the method? In other words, why have a **P(s)…V(s)** bracket the single assignment statement **requesting=false**? Where is the **race condition**?*
*d) Suppose node **m** decides to enter its critical section and sends a request message to node **n**. Node **n** sends a reply message to node **m** indicating that node **n** does not want to enter its critical section. Suppose further that nodes **n** later decides to enter its critical section and sends a request message to node **m**. What happens if node **n**'s request message is received by node **m** before the earlier-sent reply message of node **n** to node **m**?*

2. Even if in normal situations the Mutual Exclusion, Progress, No Starvation and Bounded
Waiting conditions are satisfied, in reality the Distributed Mutual Exclusion Algorithm is hard to be implemented and many problems might occur.
Discuss the problems that might occur.
Hint: [SH] page 181.

PART B: I WILL GRADE THIS PART

A. Run the posted programs (Connection Manager) and in a <u>few lines</u> explain what the programs do.

B. Using pipes create communication between three threads TA and TB and TC.
TA sends primitive data to TC.
TB will send objects to TA and primitive data to TC.
TC will send objects data to TA.
Check the message class of dimu.java and use a similar object. You will have two pieces of information: number and id.
Don't create more pipes than necessary.
There is no relation or order between different messages.

Submit the .java (source code) in a zipped folder named lastname_H4 on Blackboard. I will create a column for it.