Classical algorithms for mutual exclusion

The requirements to the solution of mutual exclusion are:

1. **Mutual Exclusion (One at a Time)**: The most fundamental rule is that at most one thread can be in its critical section (accessing a shared resource) at any given moment.
2. **No Assumption of Process Speeds**: The solution should not make assumptions about how fast or slow threads are, as this can lead to unpredictable behavior.
3. **Progress (Global Progress):** If no thread is in the critical section and some threads wish to enter, the solution should not be able to postpone the decision indefinitely.
4. **No Starvation (Individual Progress)**: A thread must not wait indefinitely to enter the critical section while other threads are repeatedly allowed in. Every thread wanting to enter the critical section should eventually get a turn.

a) Prove the correctness of Peterson's algorithm for mutual exclusion of 2 threads. This means, prove that requirement 1 is fulfilled.

b| Prove that Peterson's algorithm also fulfills the other requirements for 2 threads. (If fulfilling a requirement is conditional, describe additional assumptions under which it is fulfilled).

Hand out a report hw3.pdf.