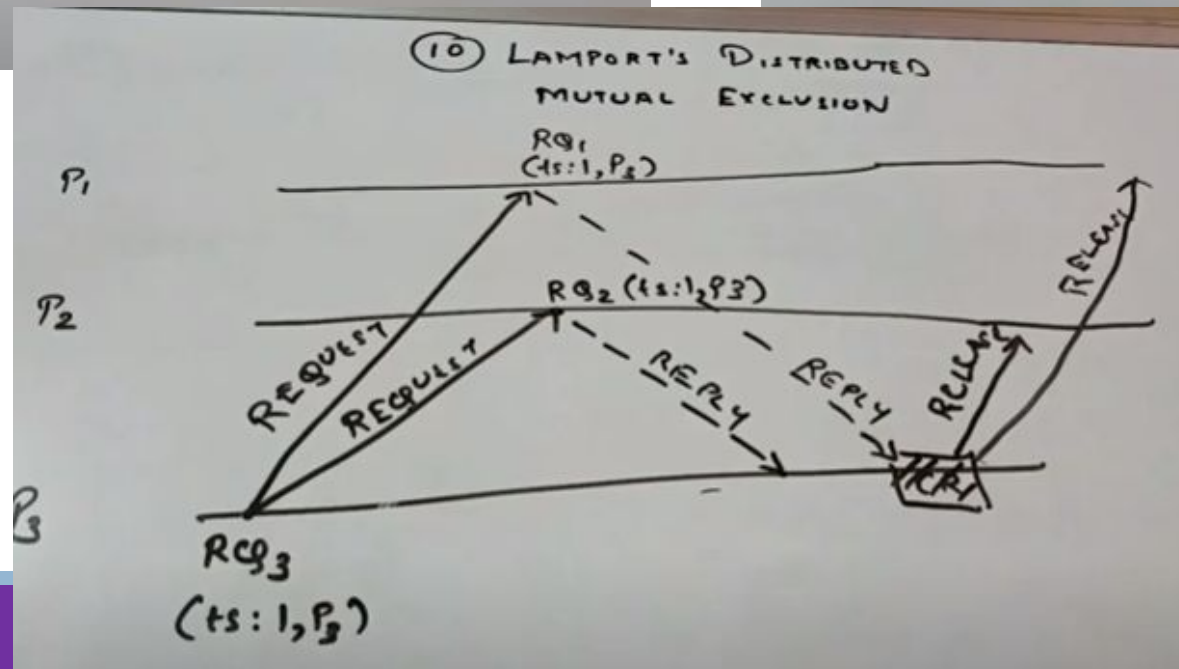
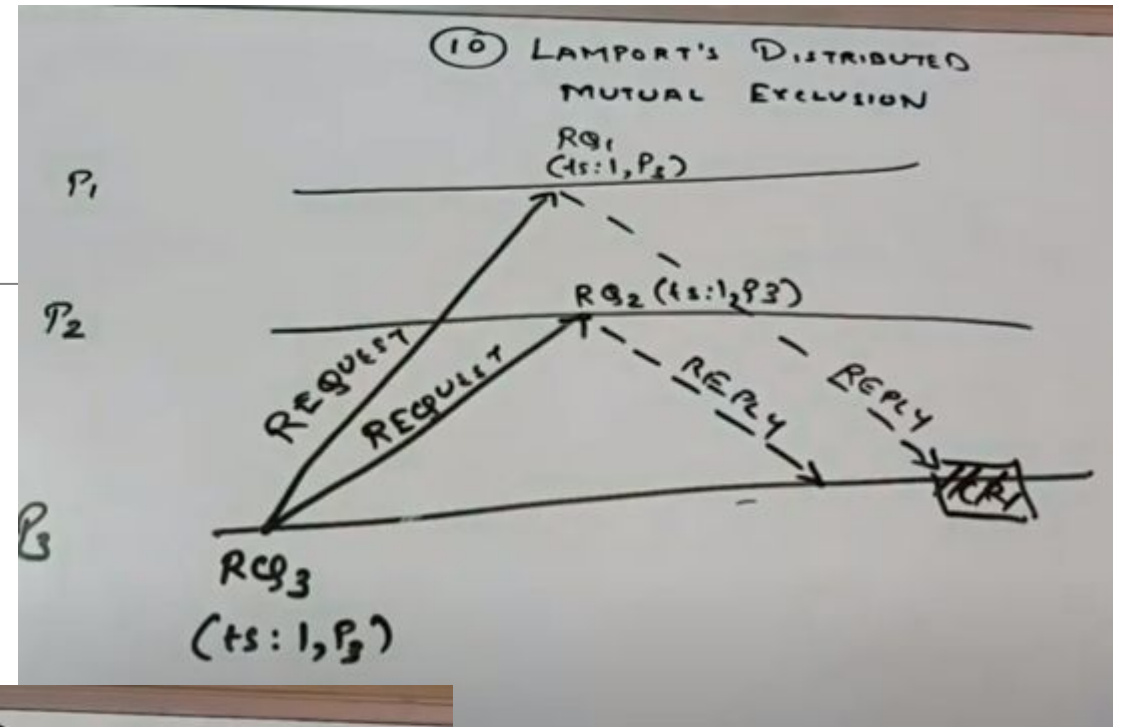
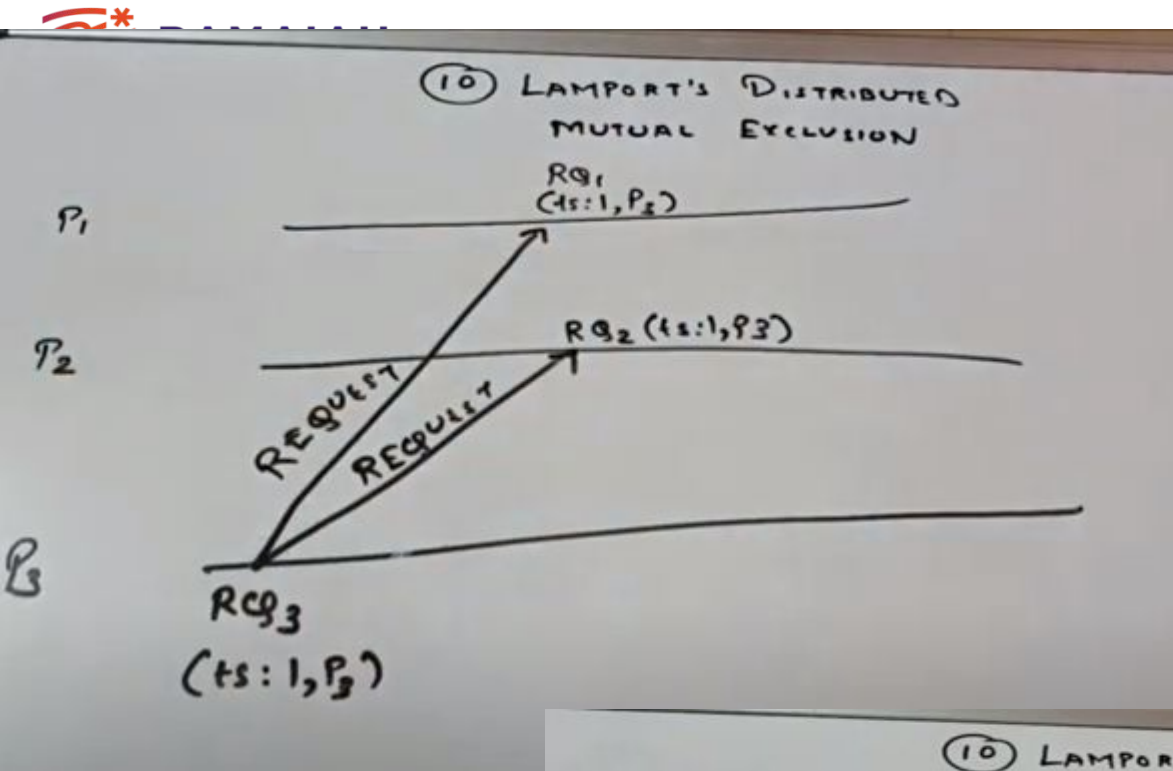


M.S. Ramaiah Institute of Technology
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Department of Computer Science and Engineering

Course Name: Distributed Systems
Course Code: CSE20/CSE751
Credits: 3:0:0

Term: Oct 2021-Feb 2022

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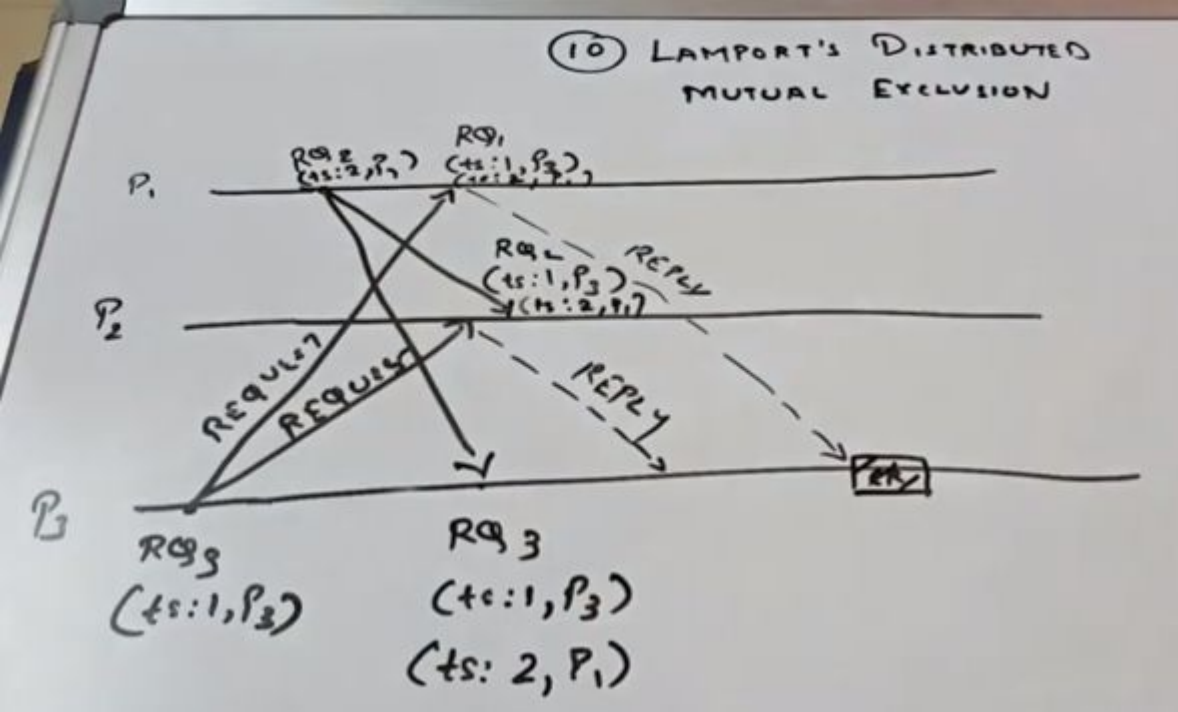
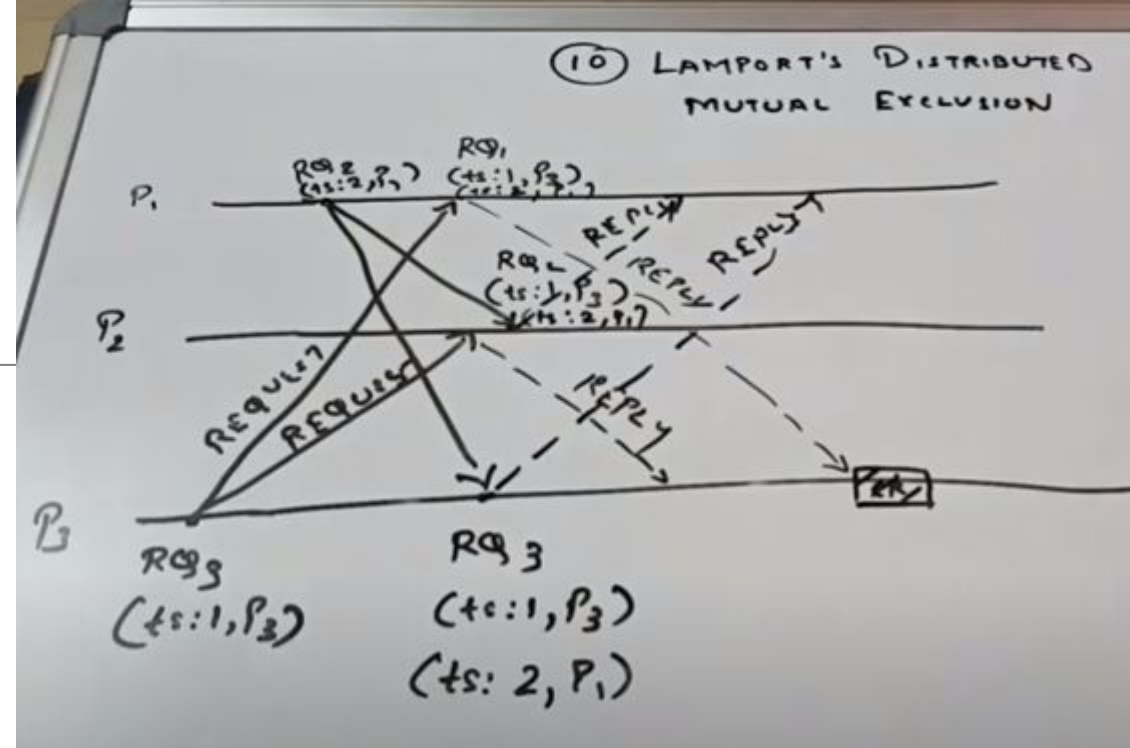
10) LAMPORT'S DISTRIBUTED MUTUAL EXCLUSION

The diagram illustrates the execution of Lamport's Distributed Mutual Exclusion algorithm across three processes: P_1 , P_2 , and P_3 .

- P_1 sends **REQUEST** to P_2 and P_3 .
 - Message to P_2 : $RQ_2 (ts: 2, P_1)$
 - Message to P_3 : $RQ_1 (ts: 1, P_3)$
- P_2 sends **REQUEST** to P_3 .
 - Message to P_3 : $RQ_2 (ts: 1, P_3)$
- P_3 sends **REPLY** to P_2 and P_1 .
 - Message to P_2 : $REPLY (ts: 2, P_1)$
 - Message to P_1 : $REPLY$
- P_1 sends **REPLY** to P_3 .
 - Message to P_3 : $REPLY$
- P_1 enters its critical section (CS), indicated by a box labeled **CS**.

Local request events are also shown:

- P_3 has a local request $RQ_3 (ts: 1, P_3)$.
- P_1 has a local request $RQ_3 (ts: 2, P_1)$.

[illegible]

⑩ LAMPORT'S DISTRIBUTED MUTUAL EXCLUSION

Sequence diagram illustrating Lamport's Distributed Mutual Exclusion algorithm across three processes: P_1 , P_2 , and P_3 .

Key events and messages shown:

- Process P_1 :**
 - Initial request: $RQ_2 (ts:2, P_1)$
 - Request received from P_2 : $RQ_1 (ts:1, P_2)$
 - Request received from P_3 : $RQ_3 (ts:1, P_3)$
 - Request received from P_3 (later): $RQ_3 (ts:2, P_1)$
 - Request received from P_2 (later): $RQ_1 (ts:2, P_1)$
 - Release received from P_2 : $RELEASE$
 - Release received from P_3 : $RELEASE$
- Process P_2 :**
 - Request received from P_1 : $RQ_2 (ts:2, P_1)$
 - Request received from P_3 : $RQ_3 (ts:1, P_3)$
 - Request received from P_1 (later): $RQ_1 (ts:1, P_2)$
 - Request received from P_3 (later): $RQ_2 (ts:2, P_1)$
 - Release received from P_1 : $RELEASE$
 - Release received from P_3 : $RELEASE$
- Process P_3 :**
 - Request received from P_1 : $RQ_3 (ts:1, P_3)$
 - Request received from P_2 : $RQ_3 (ts:2, P_1)$
 - Request received from P_1 (later): $RQ_3 (ts:2, P_1)$
 - Release received from P_2 : $RELEASE$
 - Release received from P_1 : $RELEASE$

The diagram shows the flow of REQUEST, REPLY, and RELEASE messages between the processes, ensuring mutual exclusion and progress.

