

Lamport's Algorithm - Requirement Specification

1. Functional Requirements

- Each process must maintain a logical clock.
- Each process must send timestamped REQUEST messages.
- Each process must maintain a request queue.
- Each process must send REPLY messages.
- Each process must send RELEASE messages.
- System must ensure mutual exclusion.
- System must guarantee fairness (FIFO ordering by timestamp).
- System must avoid deadlock.
- System must avoid starvation.

2. Non-Functional Requirements

- Reliability in message passing.
- Total ordering of requests.
- Logical clock synchronization using Lamport clock.
- Scalability for N processes.