



# **SNS COLLEGE OF ENGINEERING**

Kurumbapalayam (Po), Coimbatore – 641 107

**An Autonomous Institution**

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**COURSE NAME : 23CST207 - DATABASE MANAGEMENT  
SYSTEMS**

**II YEAR / IV SEMESTER**

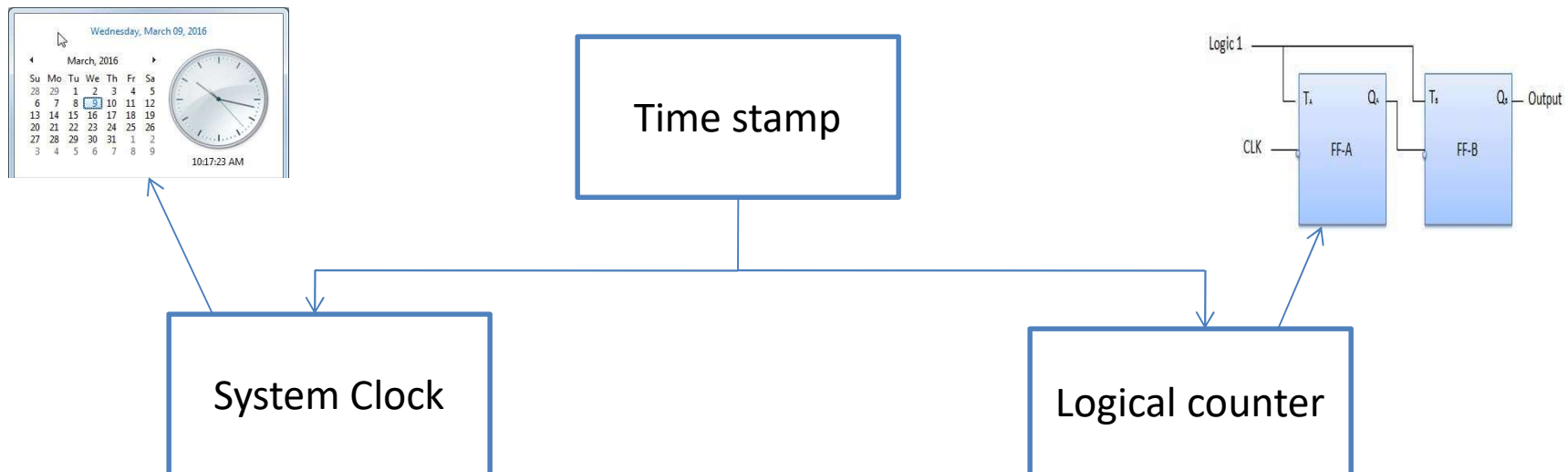
**Unit 4- Transactions**

**Topic 4 : Timestamp-based Protocols**



## Timestamp-based Protocols

- The timestamp-based algorithm uses a timestamp to serialize the execution of concurrent transactions.
- This protocol ensures that every conflicting read and write operations are executed in timestamp order.

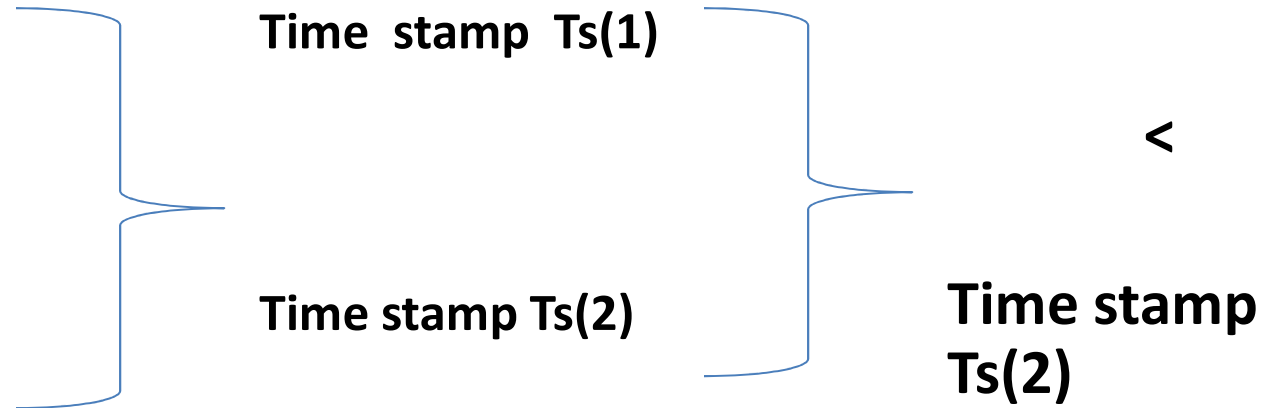




# Cont..



- T1
- 
- 
- 
- T2



Ex : 9.00 < 9.10



# CONT..



Time Stamp ordering protocol

↓  $T_s(1) < T_s(2)$

It ensures that any conflicting read & write operations  
are executed in time stamp order.

Issues Read (A) :-

- ① If  $T_s(T_i) < W(A)$  {  $T_i$  is an older transaction than the last transaction that write the value of A } { request fails }
- ② If  $T_s(T_i) \geq W(A)$  {  $T_i$  allowed to read updated value of A }



# CONT..



⇒  $T_i$  Issues Write (A)

⇒ If  $T_s(T_i) \geq \underline{W(A)}$  &  $T_s(T_i) \geq \underline{R(A)}$

[  $T_i$  is allow to modify/write value of A ] &  
{  $T_s(T_i)$  will become current value of  $W(A)$  }

⇒ If  $T_s(T_i) < R(A)$  { it means the younger  
transaction is already using value of  
{ updation is not allowed }



# CONT..



- **Advantages:**
  - Schedules are serializable just like 2PL protocols
  - No waiting for the transaction, which eliminates the possibility of deadlocks!
- **Disadvantages:**
  - Starvation is possible if the same transaction is restarted and continually aborted



# Problem

T0	T1	T2	T3	T4
STAR T	R1(A)			
	W1(A) )		R3(A)	
		R2(A)		
				W4(A)

T0	T1	T2	T3	T4
STAR T	R1(A)			
	W1(A) )		R3(A)	
		R2(A)		
				W4(A)



# PROBLEM 2

T0	T1	T2	T3	T4
STAR T		R2(A)		
	W1(A )		R3(A)	R4A)
				W4(A)

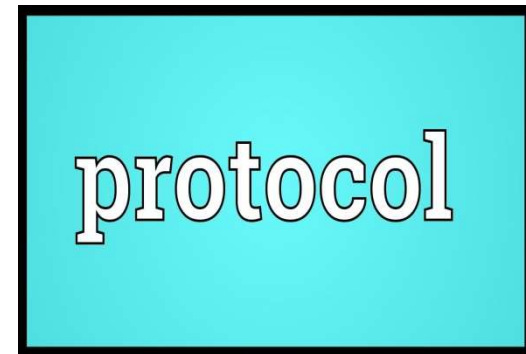




# ACTIVITY



# CONNECTION



ANS: \_\_\_\_\_



# THANK YOU