[MSQ]

Write – X(A)
Read – S(A)

#Q.   A locking protocol is implemented as follows.

2PL

Before a transaction T writes a data item A, T need to acquire exclusive lock on A, and if transaction T wants to read a data item A, T needs to acquire a shared lock on A. If exclusive locks can be unlocked only after the commit operation of the transaction, and shared locks can be released at any time, which of the following properties is/are guaranteed by the protocol?
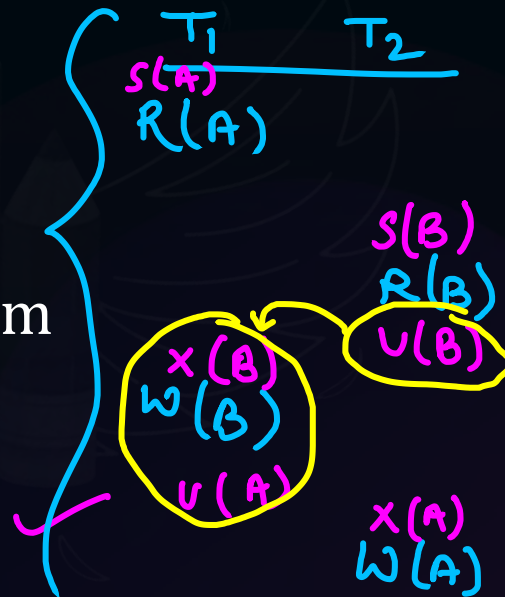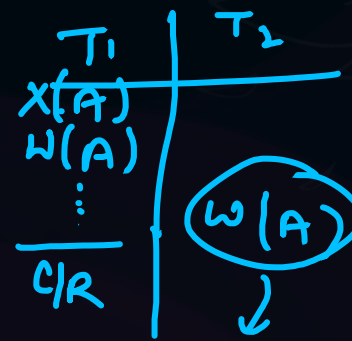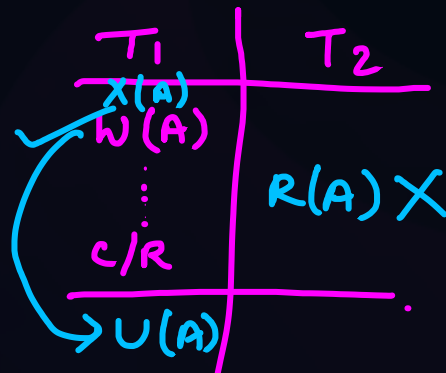
A Conflict serializability

B Recoverability

C Cascadeless schedule

D No lost update problem

T_1 T_2
$S(A)$
$R(A)$

$S(B)$
$R(B)$
$X(B)$ $U(B)$
$W(B)$
$U(A)$
$X(A)$
$W(A)$

T_1 T_2
$X(A)$
$W(A)$
    $R(A)$ X
C/R
$U(A)$

T_1 T_2
$X(A)$
$W(A)$
        $W(A)$
C/R

#Q. A locking protocol is implemented as follows.

Before a transaction T writes a data item A, T need to acquire exclusive lock on A, and if transaction T wants to read a data item A, T needs to acquire a shared lock on A. If both exclusive as well as shared locks can be unlocked only after the commit operation of the transaction, which of the following properties is/are guaranteed by the protocol?

A Conflict serializability

B Recoverability

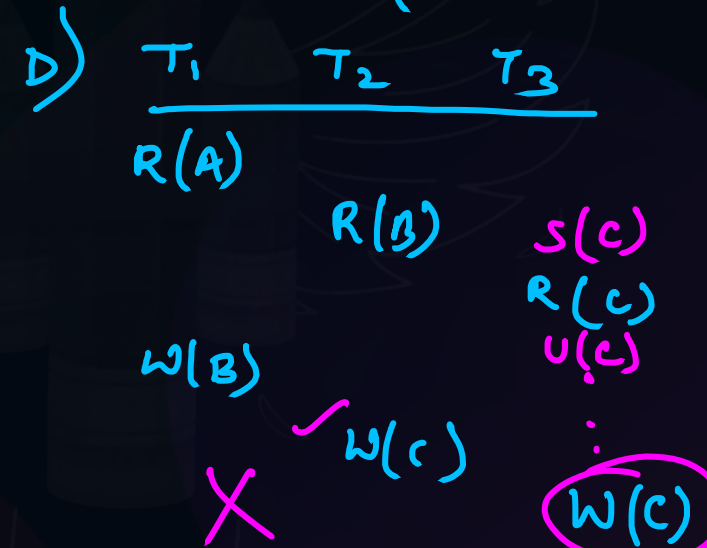**C** Cascadeless schedule
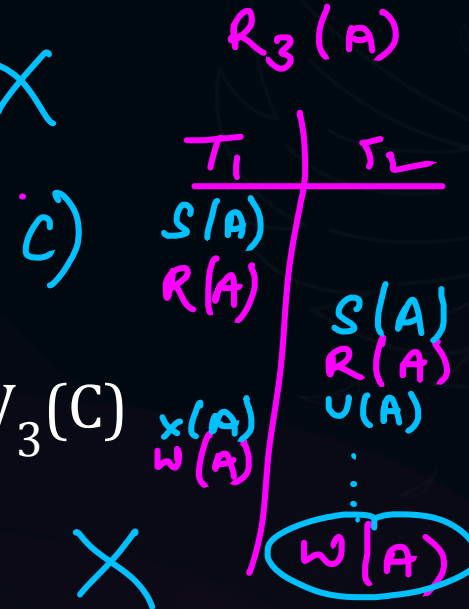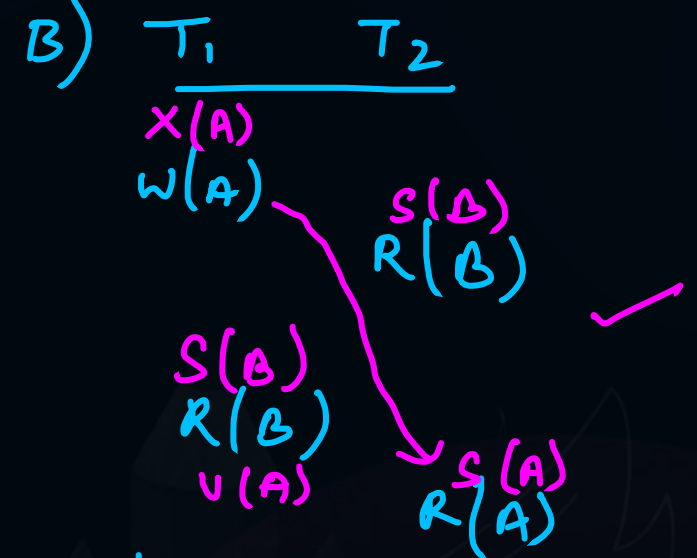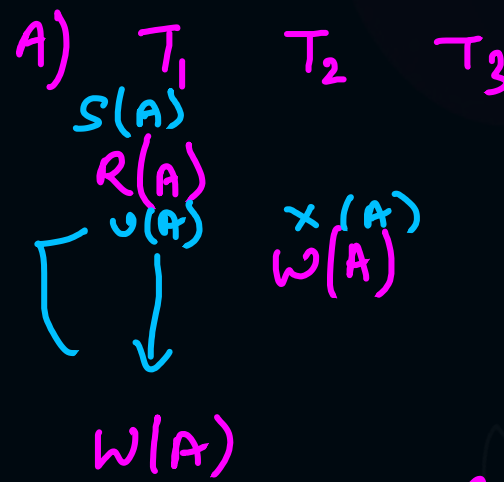
D No lost update problem

#Q.   Which of the following schedule is allowed by Basic 2PL?

A $R_1(A), W_2(A), W_1(A), R_3(A)$

B $W_1(A), R_2(B), R_1(B), R_2(A)$

C $R_1(A), R_2(A), W_1(A), W_2(A)$

D $R_1(A), R_2(B), R_3(C), W_1(B), W_2(C), W_3(C)$

A) T_1 T_2 T_3

$S(A)$
$R(A)$
$U(A)$ $X(A)$
        $W(A)$

$W(A)$ ✗

$R_3(A)$

B) T_1 T_2
_____
$X(A)$
$W(A)$ $S(B)$
        $R(B)$
$S(B)$
$R(B)$ $S(A)$
$U(A)$ $R(A)$ ✓

C) T_1 | T_2
$S(A)$
$R(A)$ | $S(A)$
      | $R(A)$
      | $U(A)$
$X(A)$ |
$W(A)$ | ⋮
   $W(A)$ ✗

D) T_1 T_2 T_3
_____
$R(A)$
        $R(B)$ $S(C)$
                $R(C)$
                $U(C)$
$W(B)$ ✓ $W(C)$ ⋮ $W(C)$ ✗

#Q. Which of the following properties is/are guaranteed by Basic 2PL?
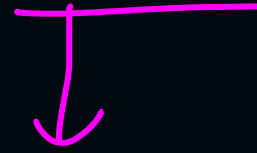
A Conflict serializability

B Recoverability

C Cascadeless Rollback

D Deadlock avoidance (Conservative 2PL)

T_1

$X(A)$

$W(A)$

$U(A)$

T_2

$S(A)$

$R(A)$ —

#Q.   Which of the following properties is/are guaranteed by Strict 2PL?

Strict
Recoverability

+ Basic 2PL

A   Conflict serializability

B   Recoverability
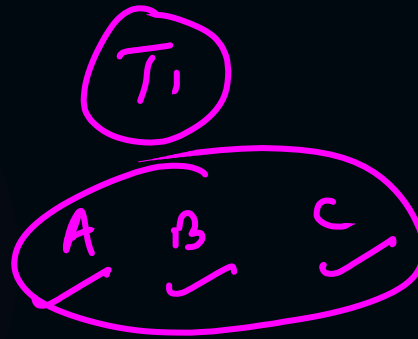
C   Cascadeless Rollback

D   Deadlock avoidance

#Q. Which of the following properties is/are guaranteed by Conservative 2PL?

A Conflict serializability

B Recoverability

C Cascadeless Rollback

D Deadlock avoidance

Basic 2PL

Strict 2PL ✗

hold or wait

No constraint on unlocking

T_1

A B C

#Q. Which of the following statements is/are true ?

iff ×

Basic 2PL

Strict 2PL ✓

A Every schedule allowed by Basic 2PL is a conflict serializable schedule.

B Every conflict serializable schedule is allowed by Basic 2PL.

C Every schedule allowed by Basic 2PL is also allowed by strict 2PL..

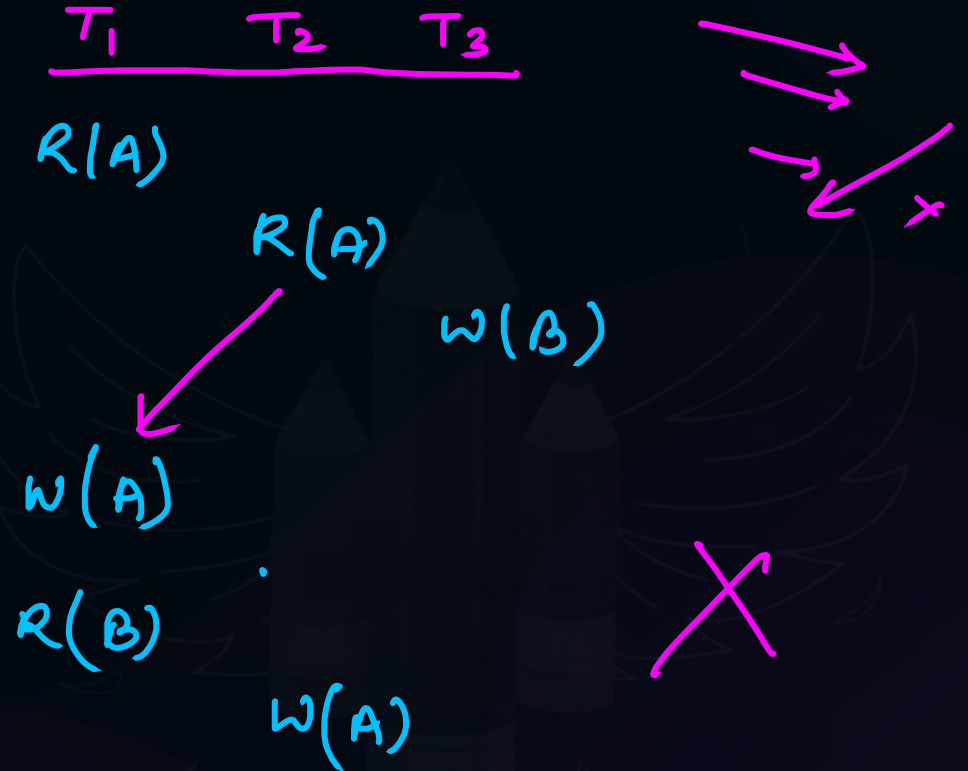**D** Every schedule allowed by Strict - 2PL is also allowed by Basic 2PL..

#Q. Consider three transactions T_1, T_2 & T_3 with (TS) time stamps such that $TS(T_1) < TS(T_2) < TS(T_3)$. Which of the following schedule is allowed to execute using Basic Time Stamp ordering protocol.

A $R_3(A), R_2(A), W_3(A), R_1(A), W_1(A), W_2(B)$

B $R_1(A), R_3(A), W_3(A), W_1(A), R_2(A), W_2(B)$

C $R_1(A), R_3(A), R_2(A), W_1(B), W_3(A), W_2(B)$

D $R_1(A), R_2(A), W_3(B), W_1(A), R_1(B), W_2(A)$

$T_1 \qquad T_2 \qquad T_3$

$R(A)$

$R(A)$

$W(A)$

$W(B)$

$R(B)$

$W(A)$

#Q.   Which of the following statements is/are true ?

A   Every schedule allowed by Basic Time stamp ordering protocol is a conflict serializable schedule.

B   Every conflict serializable schedule is allowed by Basic time stamp ordering protocol for some time stamp ordering of transactions.

Every schedule allowed by Basic time stamp ordering protocol is also allowed by Time stamp ordering protocol with Thomas write rule for some time stamp ordering of transactions.

C

D   If schedule is a view serializable schedule and view equivalent serial schedule is based on time stamp ordering of transactions, then schedule is allowed to execute using Time stamp ordering protocol with Thomas write rule without any roll back.

T_3 T_1 T_2

$R(B)$

$W(C)$

$W(B)$
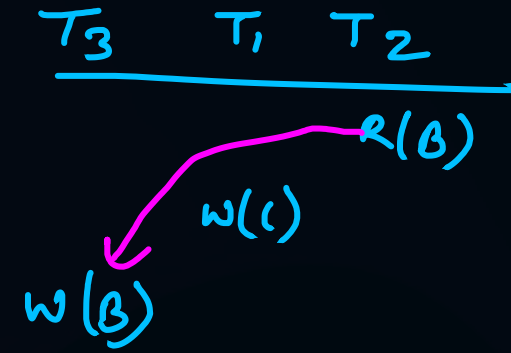
#Q.   Consider the following schedule S

S: R_2 (B), W_1(C) , W_3 (B), R_3 (C), W_2(B), W_1 (A).

for which of the following timestamp orderings transactions of the schedule will execute without rollback using timestamp ordering protocol with Thomas write rule.

A $TS(T_1, T_2, T_3) = (10, 20, 30)$

B $TS(T_1, T_2, T_3) = (10, 20, 30)$

20 10

C $TS(T_1, T_2, T_3) = (10, 30, 20)$

D $TS(T_1, T_2, T_3) = (20, 30, 10)$

#Q.   Suppose transaction T1 is already running and a new transaction T2 starts up and begins contending with T1 for resources.

Which of the following is/are true?

A Using wait-die protocol, if T_1 requires the resources held by T_2, then T_1 roll back

B Using wait-die protocol, if T_2 the resources held by T_1, then T_2 roll back

C Using wound-wait protocol, If T_1 requires the resource held by T_2, then T_1 roll back

D Using wound-wait protocol, If T_2 requires the resource held by T_1, then T_2 roll back

THANK - YOU