CS & DA

Database Management System

Transaction and Concurrency Control

DPP 01 (Discussion Notes)

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[NAT]

#Q. How many serial schedules can be formed with 4 transactions.

1) T_1 T_2 T_3 T_4

2) T_1 T_2 T_4 T_3

3) T_1 T_4 T_2 T_3

$4! = 24$

[NAT]

#Q. How many concurrent schedules can be formed with 3 transactions having 4, 3 & 2 operations respectively.

T_1 – 4 ops

T_2 – 3 ops

T_3 – 2 ops

Total ops = 9 ops

$$\frac{9!}{4!\ 3!\ 2!} = 1260$$

[MCQ]

#Q. Consider the following schedule

S: $R_1(A)$; $R_3(A)$; $R_2(A)$; $W_1(B)$; $R_2(B)$; $R_3(A)$; $W_2(C)$; $R_3(C)$ over the transaction T_1, T_2 & T_3.

If transaction T_1 fails just after R_3 (C) by transaction T3, then which transaction need to be rolled back along with T_1.

A T_2

B T_3

C Both T_2 & T_3

D None

T_1 T_k

$w(x)$

$R(x)$

T_2

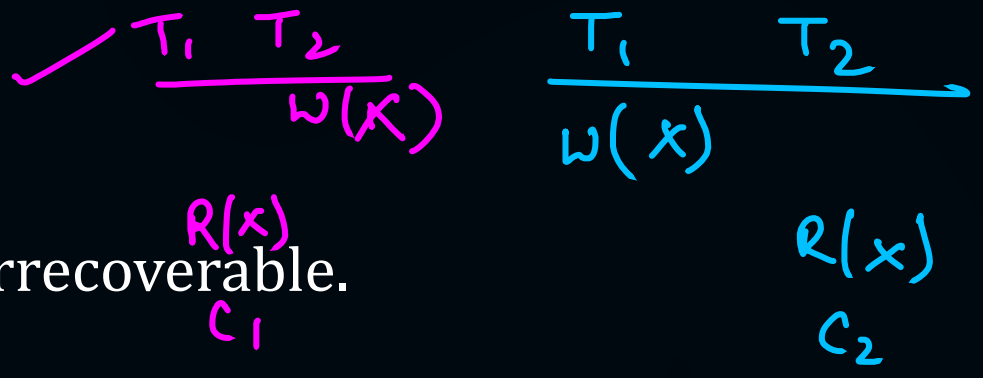
[NAT]

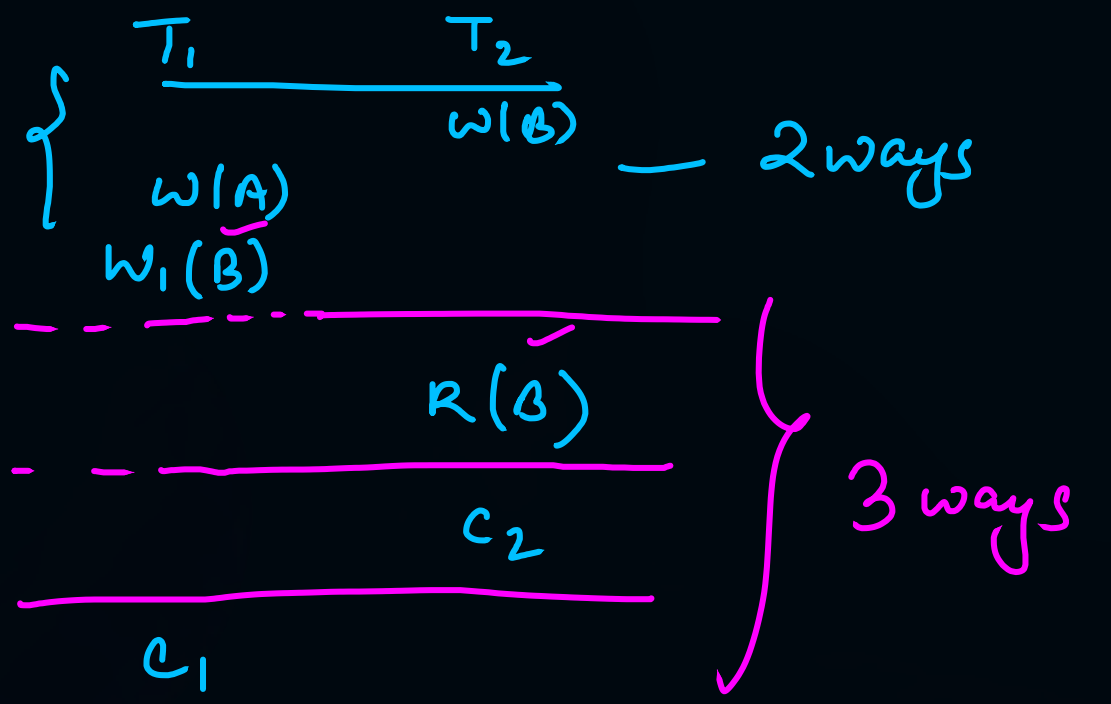
#Q. Consider the following transactions.

T_1; W_1 (A); W_1 (B); R_1 (C); C_1;

T_2; W_2 (B); R_2 (B); C_2:

How many schedules of T_1 & T_2 are irrecoverable.





2 × 3 — 6 ways

[MCQ]

#Q. Two schedules S_1 and S_2 are called conflict equivalent if S_1 can be derived from S_2 by a sequence of swaps of non-conflicting operations.

Consider the two statements:

I → If two schedule are conflict equivalent, then their precedence graphs are identical.

II → If two schedules involve same set of transactions, and their precedence graphs are identical. Then they are conflict equivalent.

A Both I & II are correct

B Only I is correct

C Only II is correct

D Neither I nor II is correct

[MCQ]

#Q. Which of the following schedules is/are irrecoverable.

A. $R_1(A), R_2(C), R_1(C), R_3(A), R_3(B), W_1(A), C_1, W_3(B), C_3, R_2(B), W_2(C), W_2(B), C_2$

B. $R_1(A), R_2(C), R_1(C), R_3(A), R_3(B), W_1(A), W_3(B), R_2(B), W_2(C), W_2(B), C_1, C_2, C_3$

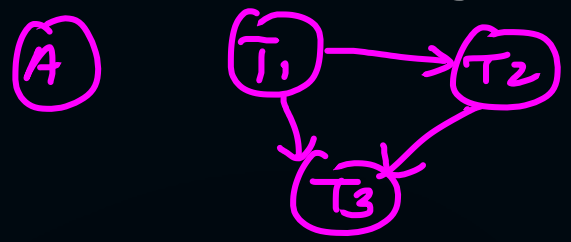
C. $R_1(A), R_2(C), R_3(A), R_1(C), R_2(B), R_3(B), W_1(A), C_1, W_2(C), W_3(B), W_2(B), C_3, C_2$

D. All are recoverable

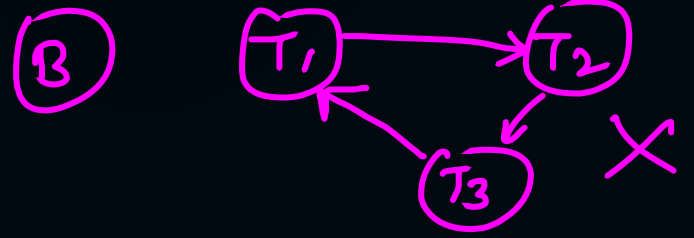
[MCQ]

#Q. Which of the following schedules is/are conflict serializable.

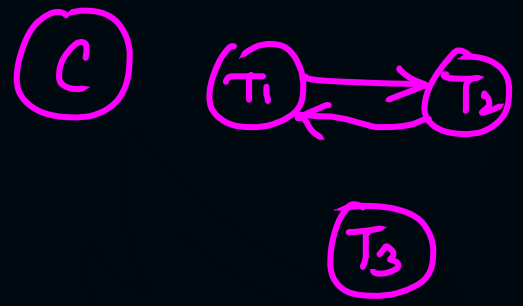
A



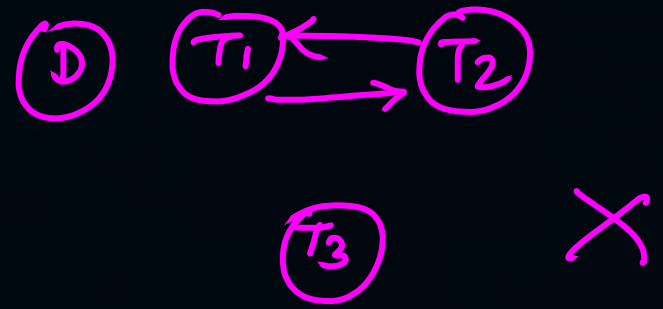
B



C



D



(A) $R_1(x), W_1(y), R_2(y), W_2(z), R_3(z), W_3(x)$

(B) $W_3(x), R_1(x), W_1(y), R_2(y), W_2(z), R_3(z)$

(C) $R_1(x), R_2(x), W_1(y), W_2(y), R_1(y), R_2(y), W_2(z)$

(D) $R_1(x), R_2(x), R_1(y), R_2(y), R_3(x), W_1(x), W_2(y)$

[MCQ]

#Q. Consider the following schedule S.

Schedule S is conflict equivalent to which of the following serial schedule.

A $T_1 \rightarrow T_3 \rightarrow T_2$

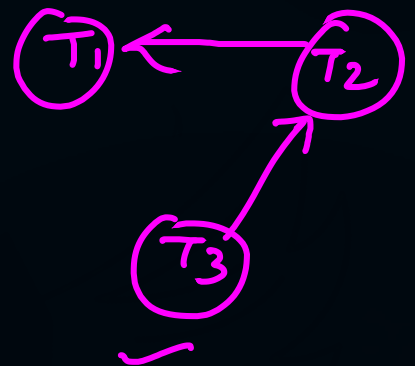
B $T_3 \rightarrow T_1 \rightarrow T_2$

C $T_3 \rightarrow T_2 \rightarrow T_1$

D $T_2 \rightarrow T_1 \rightarrow T_3$

S

T_1	T_2	T_3
$R_1(x)$		
	$R_2(x)$	$R_3(y)$
$W_1(x)$		
	$R_2(z)$	
	$R_2(y)$	
	$W_2(y)$	
$W_1(z)$		

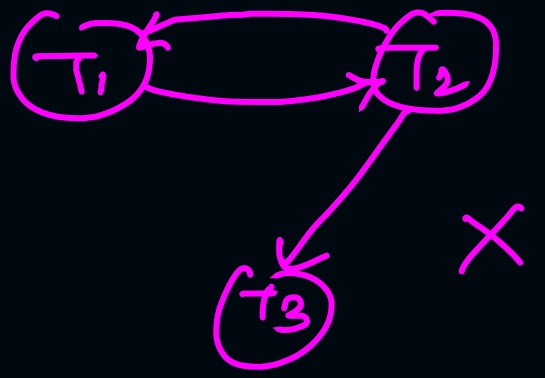


[MSQ]

#Q. Consider the following schedule S.

S

T_1	T_2	T_3
	$R_2(B)$	
	$W_2(A)$	
$R_1(A)$		
		$R_3(A)$
$W_1(B)$		
	$W_2(B)$	
		$W_3(B)$



Initial read

T_2 ✓

Updated read

$T_2 \rightarrow T_1$

$T_2 \rightarrow T_3$

Which of the following options is/are correct ?

A The schedule is conflict serializable schedule

B The schedule is view serializable schedule

C $T_2 \rightarrow T_1 \rightarrow T_3$ is conflict equivalent serial schedule to s.

D $T_2 \rightarrow T_1 \rightarrow T_3$ is view equivalent serial schedule to s.

[MCQ]

#Q. Consider the following schedule S.

S: $R_1(A), W_2(B), R_2(C), W_3(B), W_2(A), W_1(A), R_3(B), R_1(A), R_2(C), R_3(C), W_2(C), C_1, C_3, C_2,$

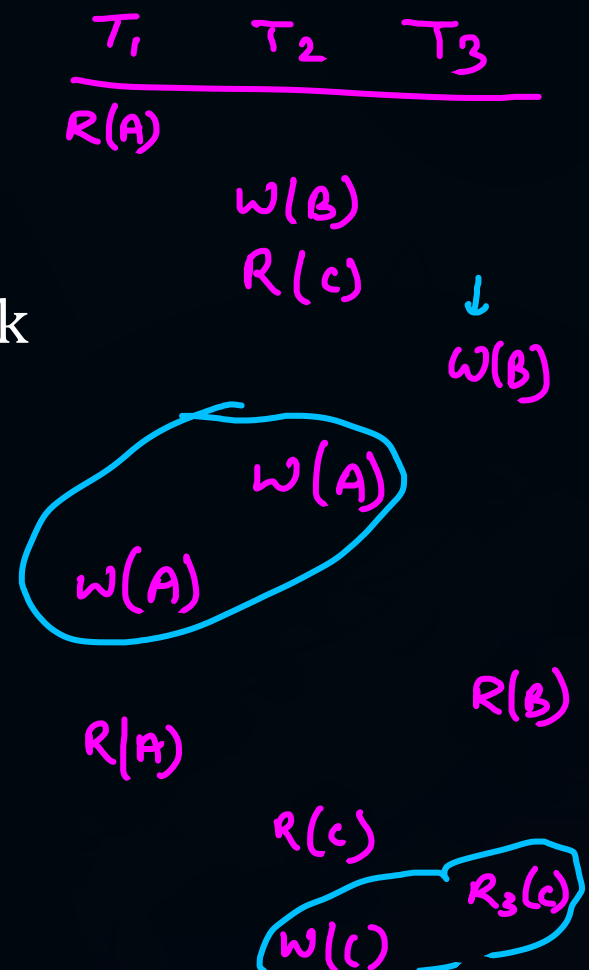
Schedule S suffers from which of the following problems.

A. Irrecoverability

B. Cascading Roll back

C. Lost update problem

D. RW Problem



THANK - YOU