

Database Management System

Transaction & Concurrency Control

DPP 04

[MCQ]

1. Consider the following statements:

P: If a schedule is allowed by 2PL, it guarantee conflict serializable.

Q: A conflict serializable schedule is always allowed by 2PL.

Which of the following is/are correct?

- (a) P only
- (b) Q only
- (c) Both P and Q
- (d) Neither P nor Q

[MSQ]

2. Consider the following schedule: -

S: $R_1(P)$; $W_1(P)$; $R_2(P)$; $R_2(Q)$; $R_1(Q)$; $W_1(Q)$; C_1 ; C_2 ;

Which of the following is correct?

- (a) S is conflict serializable.
- (b) S is not conflict serializable.
- (c) S is allowed by 2PL.
- (d) S is not allowed by 2PL.

[MCQ]

3. Consider the following statements:

P : A schedule allowed by 2PL is always strict – recoverable

Q : A strict recoverable schedule is always allowed by 2PL.

Which of the following statement is/are CORRECT?

- (a) Q only
- (b) Neither P nor Q
- (c) P only
- (d) Both P and Q

[MSQ]

4. Consider the following schedule –

S : $R_x(A)$; $W_y(A)$; $W_y(B)$; $R_z(B)$; $R_z(C)$; $W_x(C)$; C_x ; C_y ; C_z ;

Which of the following is/are CORRECT?

- (a) The given schedule is conflict serializable.
- (b) The given schedule is allowed by 2PL.
- (c) The given schedule is not allowed by 2PL.
- (d) The given schedule is not conflict serializable.

[MSQ]

5. Consider the following schedule –

S : $W_2(P)$; $W_1(P)$; $W_2(Q)$; $W_3(P)$; $W_1(Q)$; $W_3(Q)$; C_1 ; C_2 ; C_3 ;

Which of the following is/are correct?

- (a) S is not allowed by 2PL.
- (b) S is allowed by 2PL.
- (c) The equivalent serial schedule to S is $T_3 \rightarrow T_2 \rightarrow T_1$.
- (d) The equivalent serial schedule to S is $T_2 \rightarrow T_1 \rightarrow T_3$.

[MSQ]

6. Consider the following schedule –

S : $W_2(P)$; $W_1(P)$; $W_3(P)$; $W_2(Q)$; $W_1(Q)$; $W_3(Q)$; C_1 ; C_2 ; C_3 ;

Which of the following is/are correct?

- (a) S is conflict serializable.
- (b) S is allowed by 2PL.
- (c) S is not allowed by 2PL.
- (d) Serial schedule equivalent to S is $T_2 \rightarrow T_1 \rightarrow T_3$.

[MCQ]

7. Which of the following is FREE from deadlock?

- (a) Basic 2PL.
- (b) Strict 2PL.
- (c) Conservative 2PL.
- (d) Rigorous 2PL.

[NAT]

8. Consider the following schedule (S):

S : $R_1(A)$; $W_2(A)$; $W_1(A)$; $W_3(A)$; C_1 ; C_2 ; C_3 ;

- (i) S is conflict serializable.
- (ii) S is not conflict serializable.
- (iii) S is not allowed by 2PL.

How many statements is/are correct for above schedule(s)? ____.

[MCQ]

9. Consider the following transaction for schedule(S)
S:

T ₁	T ₂	T ₃
R(A)		
	W(A) W(B)	
		R(B) R(C)
W(C)		

For schedule(S) which of the following is true?

- (a) Conflict serializable and allowed by 2PL.
- (b) Not conflict serializable and not allowed by 2PL.
- (c) Conflict serializable but not allowed by 2PL.
- (d) None of the above.

[MCQ]

10. Consider the following schedule(S)

S : W₂(A); W₁(A); W₂(B); W₃(A); W₁(B); W₃(B); C₁;
C₂; C₃;

Which of the following is INCORRECT?

- (a) S is recoverable.
- (b) S is cascade recoverable.
- (c) S is conflict serializable
- (d) S is not view serializable.

[MCQ]

11. Which of the following is true about 2PL?

- (a) If schedule is allowed by 2PL then, there is no lost update problem.
- (b) If schedule is allowed by 2PL then, there is no starvation.
- (c) If schedule is allowed by 2PL then, there is possibility of deadlock.
- (d) None of the above.

[MCQ]

12. Consider the following schedule(s);

T ₁	R(A)		W(A)		C	
T ₂		R(A)		W(A)		C

Which of the following is true about above schedule(S):

- (a) S is free from deadlock.
- (b) S is allowed by 2PL.
- (c) S is conflict serializable.
- (d) None of the above.

[MCQ]

13. Consider the following statements:

S₁ : Every serial schedule is not strict 2PL schedule.

S₂ : If schedule allowed by 2PL then it's may / may not be allowed by strict 2PL.

S₃ : Every serial schedule may not be conflict serializable schedule.

Which of the following is INCORRECT?

- (a) S₁ only.
- (b) S₂ and S₃ only.
- (c) S₁ and S₃ only.
- (d) S₁, S₂ and S₃.

Answer Key

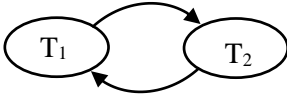
- | | |
|--------------|---------|
| 1. (a) | 8. (2) |
| 2. (b, d) | 9. (b) |
| 3. (b) | 10. (d) |
| 4. (c, d) | 11. (c) |
| 5. (b, d) | 12. (d) |
| 6. (a, c, d) | 13. (d) |
| 7. (c) | |



Hints & Solutions

1. (a)
If a schedule is allowed by 2PL then, it is always conflict serializable. But vice-versa not true.

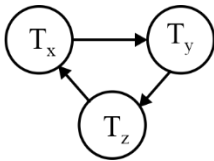
2. (b, d)
Precedence graph -



Not conflict serializable and not allowed by 2PL.

3. (b)
Both statements are INCORRECT.

4. (c, d)
Precedence graph

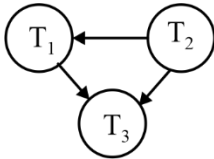


→ Since a cycle exists, it is not conflict serializable



Hence, it is not allowed by 2PL.

5. (b, d)
It is conflict serializable



2PL Testing-

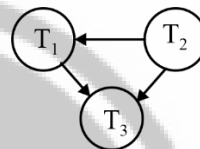
T ₁	T ₂	T ₃
	lock x(P) W ₂ (P) lock x (Q) unlock (P)	
lock x (p) W ₁ (P)		
	W ₂ (Q) unlock (Q)	
lock X(Q) unlock (P)		lock X(P) W ₃ (P)

W ₁ (Q) unlock (Q)		
		lock X(Q) W ₃ (Q) unlock (P) unlock (Q)

It is allowed by 2PL

Equal serial schedule – T₂ → T₁ → T₃ (based on point order)

6. (a, c, d)
Precedence graph -
S:



→ S is conflict serializable

T₂ → T₁ → T₃

2PL testing;

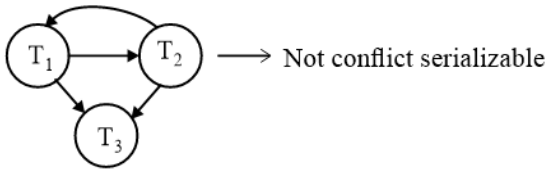
T ₁	T ₂	T ₃
	lock x(P) W ₂ (P) lock x (Q) unlock (P)	
lock x (p) W ₁ (P)	Not possible unlock (Q)	
not possible Lock X(Q) not possible unlock (P)		denied Lock x (P) W ₃ (P)
	W ₂ (Q) unlock(Q)	
W ₁ (Q)		W ₃ (Q)

Hence, the above schedule is not allowed by 2PL.

7. (c)

Conservative 2PL is free from deadlock and remaining are not free from deadlock.

8. (2)

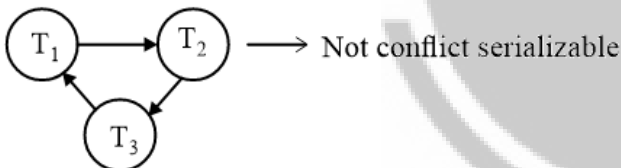


T ₁	T ₂	T ₃
X(A)		
R(A)		
	X(A) → denied W(A)	
W(A)		
		W(A)

Not allowed by 2PL

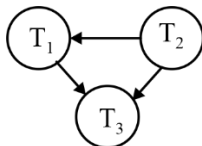
Only (2) statement are correct.

9. (b)



- Not allowed by 2PL because R₃(C) and W₁(C) will conflict for X(c) and S(A).

10. (d)



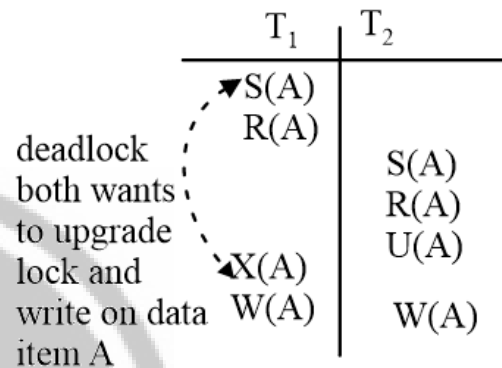
- No cycle so conflict serializable.
- If schedule is conflict serializable then it will be view serializable also.
- Hence, option (d) is correct.

11. (c)

- 2PL condition not sufficient to avoid irrecoverable, cascading roll back and lost update problem.
- 2PL restriction may lead to starvation and deadlock.

Hence, option (c) is correct.

12. (d)



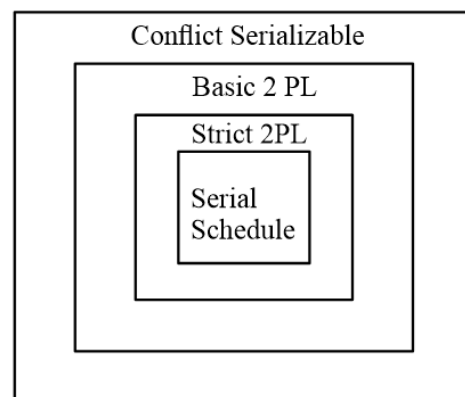
- Not allowed by 2PL



- S is not conflict serializable

Hence option (d) is correct.

13. (d)



All statements are incorrect.



Any issue with DPP, please report by clicking here:- <https://forms.gle/t2SzQVvQcs638c4r5>

For more questions, kindly visit the library section: Link for web: <https://smart.link/sdfez8ejd80if>



PW Mobile APP: <https://smart.link/7wwosivoicgd4>

