Week 10 - 4-5 types

3 4 question

- serial sched
- confid
- locking/ time

initial

(i) initial read should be the same

(ii) W(A) - R(A) pair

(iii) Final write should be the sam

if blind write consit

10. Consider the following schedule **S** with three transactions T1, T2 and T3: [NAT:1 points]

**S**: $R2(B); R1(B); R1(A); W1(A); R3(C); W3(C);$

The number of serial schedule for given schedule **S** is....

| $T_1$ | $T_2$ | $T_3$ |
|---|---|---|
| | R(B) | |
| R(B) | | |
| R(A) | | |
| W(A) | | |
| | | R(C) |
| | | W(C) |

$T_3$ $T_1$ $T_2$

$T_3$ $T_2$ $T_1$

(1) conflict

(2) view

$T_1$ $T_2$ $T_3$ → 3!

$= 3 \times 2$

$= 6$

$T_1$ $T_2$ $T_3$

$T_1$ $T_3$ $T_2$

$T_2$ $T_1$ $T_3$

$T_2$ $T_3$ $T_1$

(1) R(A) W(A)

(2) W(A) R(A)

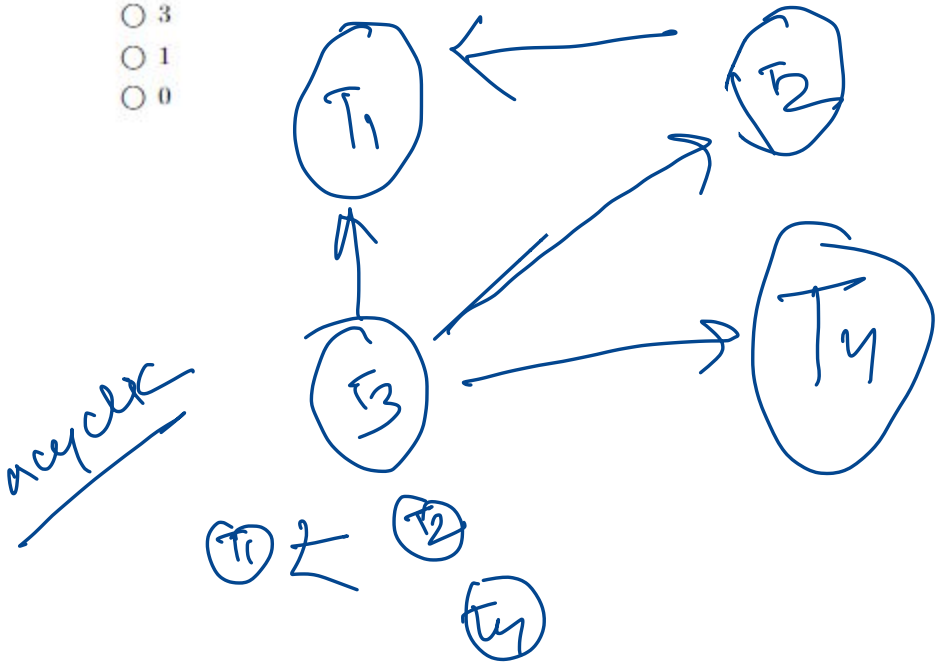
(3) W(A) W(A) conflicting into

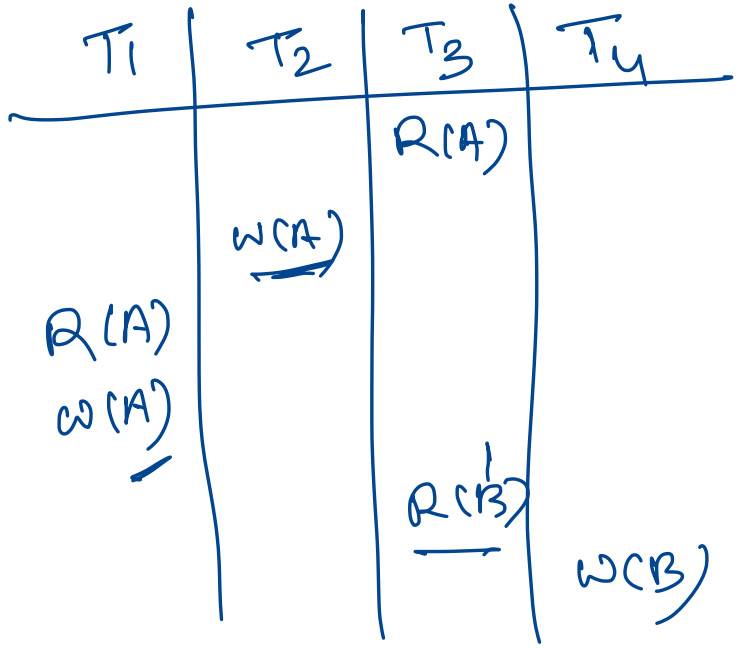
11. Consider the following schedule **S** with four transactions T1, T2, T3,T4: [Subendu:MCQ:2 points]

**S**: $R3(A); W2(A); R1(A); W1(A); R3(B); W4(B);$

Where, Ri(A) denotes a read operation by transaction Ti on a data item A, Wi(A) denotes a write operation by transaction Ti on a data item A.
What is the possible number of conflict serializable schedule of the above schedule **S**.
Ans: [redacted]

- ○ 4
- ○ 3
- ○ 1
- ○ 0




$T_3 \rightarrow T_4 \rightarrow T_2 \rightarrow T_1$

$T_3 \rightarrow T_2 \rightarrow T_4 \rightarrow T_1$

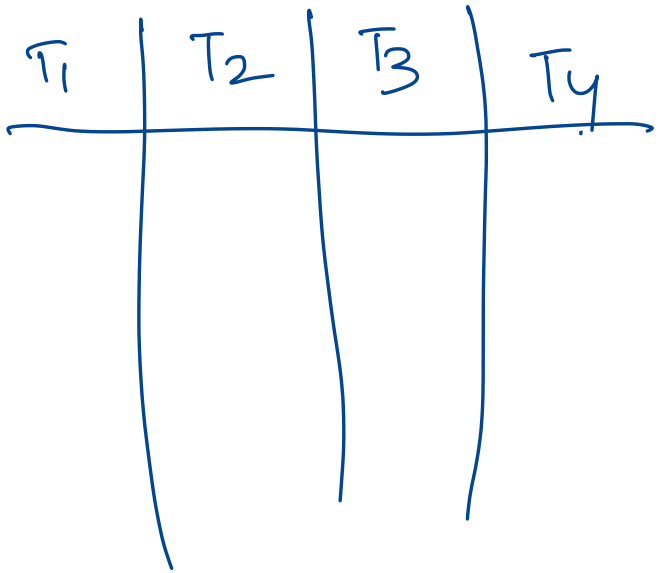
$T_3 \rightarrow T_2 \rightarrow T_1 \rightarrow T_4$

11. Consider the following schedule **S** with four transactions T1, T2, T3,T4: [Subendu:MCQ:2 points]

**S**: $R3(A); W2(A); R1(A); W1(A); R3(B); W4(B);$

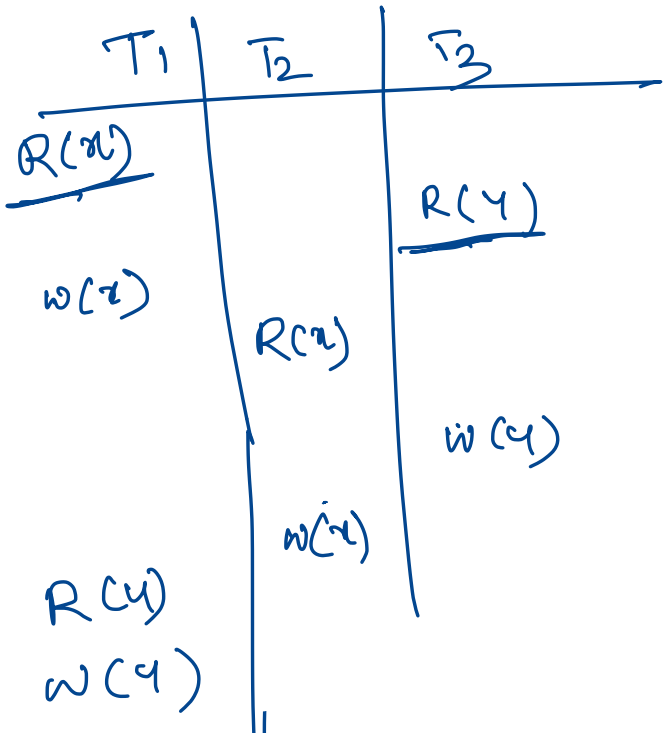
Where, Ri(A) denotes a read operation by transaction Ti on a data item A, Wi(A) denotes a write operation by transaction Ti on a data item A.
What is the possible number of conflict serializable schedule of the above schedule **S**.
Ans: Option b

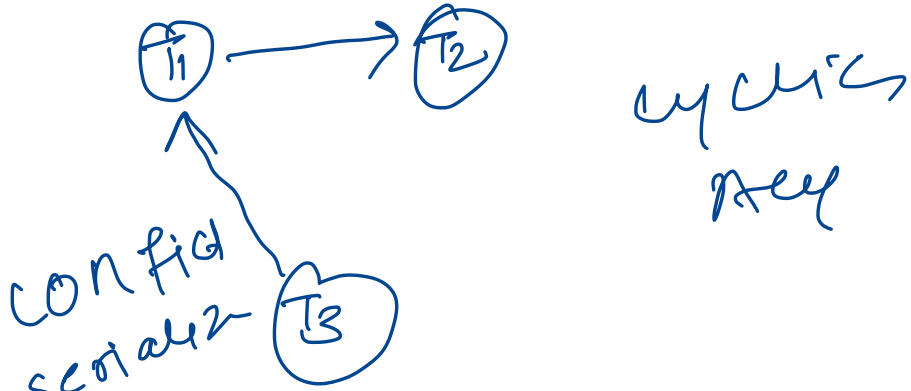
- ○ 4
- ○ 3
- ○ 1
- ○ 0



17. Consider the following two schedules **S1** and **S2** and three transactions $T_1$, $T_2$, $T_3$:

**S1** : $R_1(X)$; $R_3(Y)$; $W_1(X)$; $R_2(X)$; $W_3(Y)$; $W_2(X)$; $R1_(Y)$; $W_1(Y)$;
**S2** : $R_3(Y)$; $R_1(X)$; $W_1(X)$; $R_2(X)$; $W_3(Y)$; $R_1(Y)$; $W_1(Y)$; $W_2(X)$;

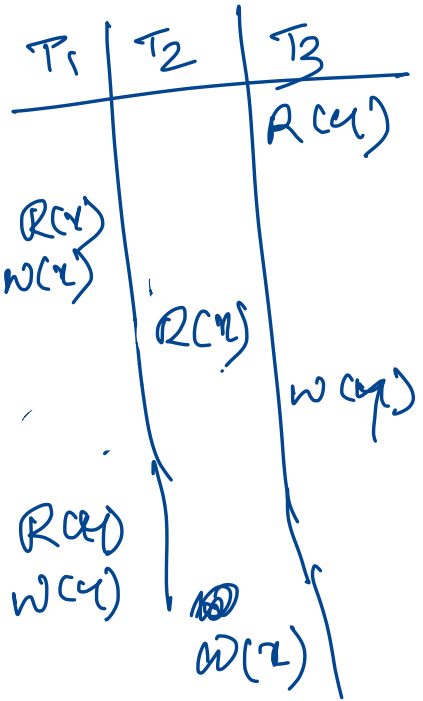


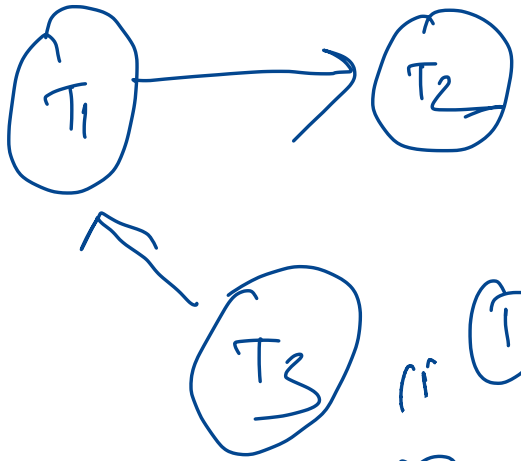




vic

17. Consider the following two schedules **S1** and **S2** and three transactions $T_1$, $T_2$, $T_3$:

**S1** : $R_1(X)$; $R_3(Y)$; $W_1(X)$; $R_2(X)$; $W_3(Y)$; $W_2(X)$; $R1_(Y)$; $W_1(Y)$;
**S2** : $R_3(Y)$; $R_1(X)$; $W_1(X)$; $R_2(X)$; $W_3(Y)$; $R_1(Y)$; $W_1(Y)$; $W_2(X)$;




Acyclic graph

if (1) S1 is conflict serializable

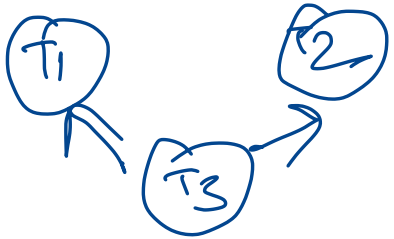
(1) S2 is conflict

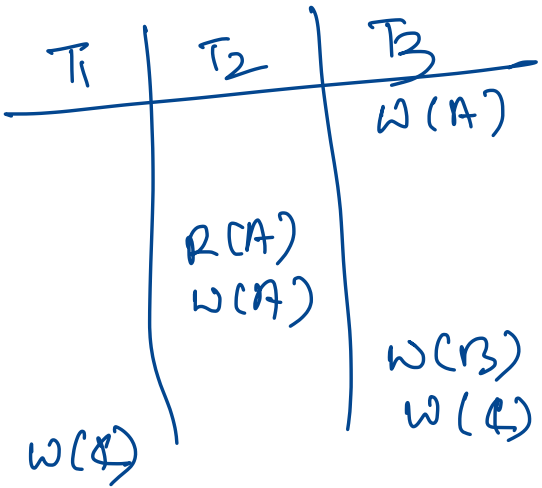
3. Consider the following schedules: [MSQ: 3 Points]

**S1**:W3(A), R2(A), W2(A), W3(B), W3(C), W1(C)
**S2**:W1(A), W3(A), W3(C), W2(A), W1(B), W3(B)

Which of the following options is/are correct?

- Schedule **S1** is conflict serializable.
- Schedule **S1** can be two-phase lockable.
- Schedule **S2** is conflict serializable.
- Schedule **S2** can be two-phase lockable.



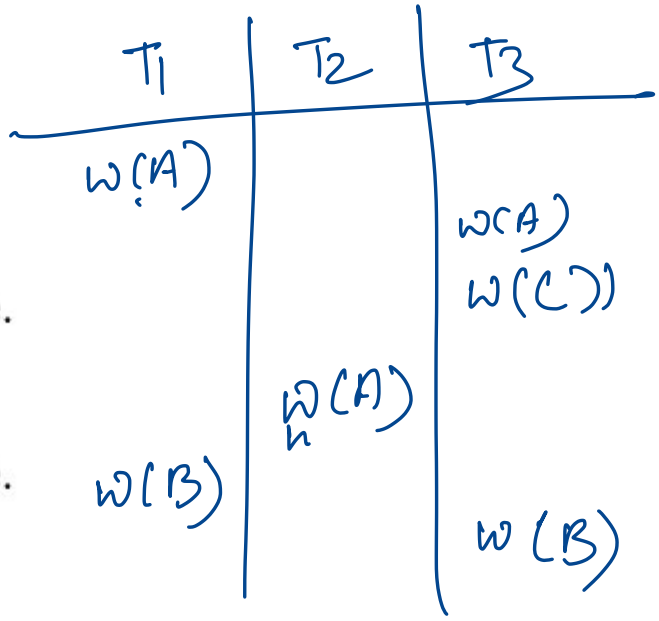



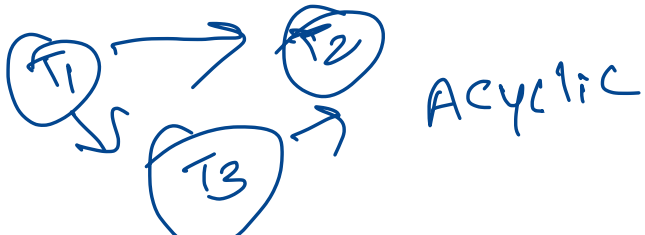
3. Consider the following schedules: [MSQ: 3 Points]

**S1**:W3(A), R2(A), W2(A), W3(B), W3(C), W1(C)
**S2**:W1(A), W3(A), W3(C), W2(A), W1(B), W3(B)

Which of the following options is/are correct?

- ◯ Schedule **S1** is conflict serializable.
- ◯ Schedule **S1** can be two-phase lockable.
- ◯ Schedule **S2** is conflict serializable.
- ◯ Schedule **S2** can be two-phase lockable.



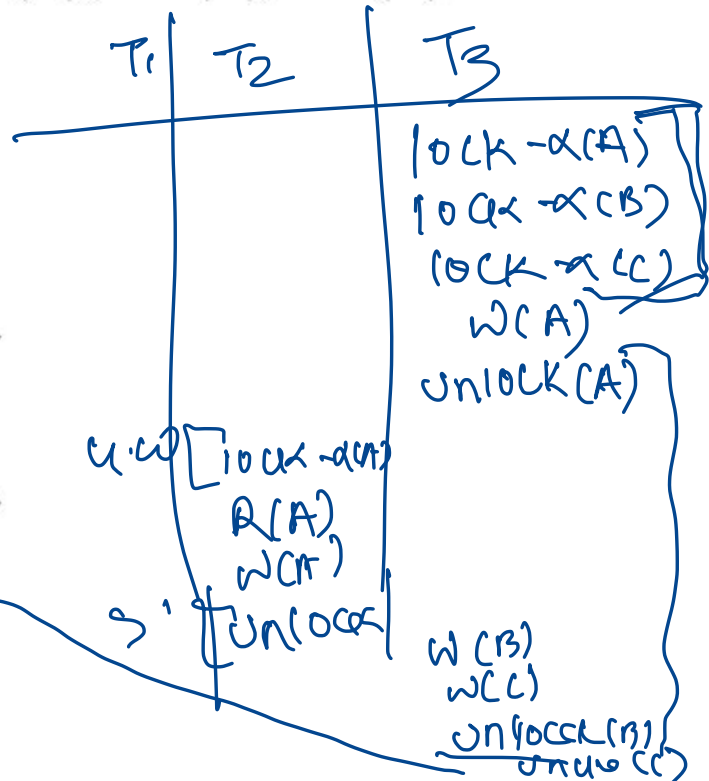

Acyclic

3. Consider the following schedules: [MSQ: 3 Points]

**S1**:W3(A), R2(A), W2(A), W3(B), W3(C), W1(C)
**S2**:W1(A), W3(A), W3(C), W2(A), W1(B), W3(B)

Which of the following options is/are correct?

- ◯ Schedule **S1** is conflict serializable.
- ◯ Schedule **S1** can be two-phase lockable.
- ◯ Schedule **S2** is conflict serializable.
- ◯ Schedule **S2** can be two-phase lockable.



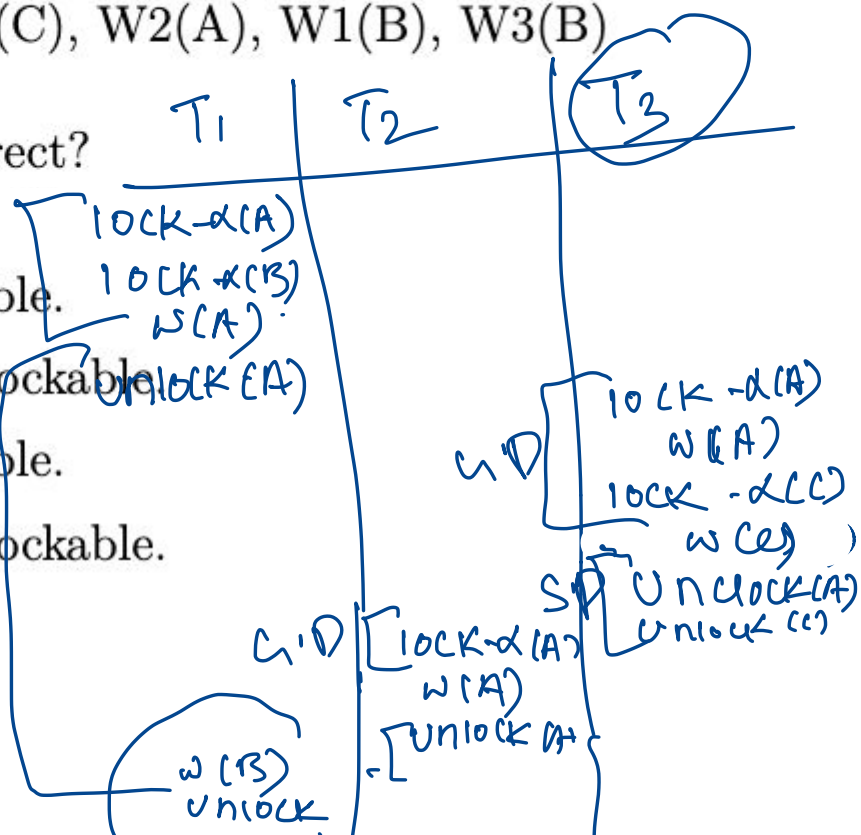

growing phase
shrinking ph
lock-x(C)
W(C)
unlock(C)

3. Consider the following schedules: [MSQ: 3 Points]

**S1**:W3(A), R2(A), W2(A), W3(B), W3(C), W1(C)
**S2**:W1(A), W3(A), W3(C), W2(A), W1(B), W3(B)

Which of the following options is/are correct?

- ◯ Schedule **S1** is conflict serializable.
- ◯ Schedule **S1** can be two-phase lockable.
- ◯ Schedule **S2** is conflict serializable.
- ◯ Schedule **S2** can be two-phase lockable.

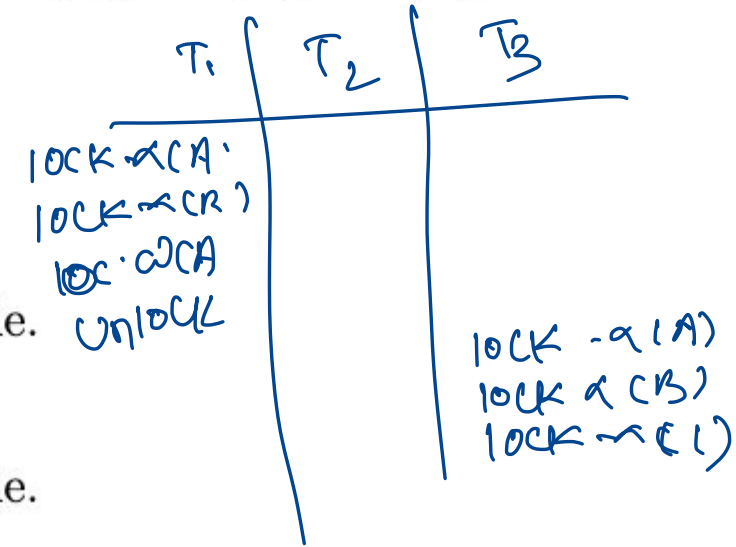


3. Consider the following schedules: [MSQ: 3 Points]

**S1**:W3(A), R2(A), W2(A), W3(B), W3(C), W1(C)
**S2**:W1(A), W3(A), W3(C), W2(A), W1(B), W3(B)

Which of the following options is/are correct?

- ◯ Schedule **S1** is conflict serializable.
- ◯ Schedule **S1** can be two-phase lockable.
- ◯ Schedule **S2** is conflict serializable.
- ◯ Schedule **S2** can be two-phase lockable.



5. Figure 2 shows the precedence graph of a conflict serializable schedule **S**. How many serial schedules are there to which **S** can be conflict serialized?

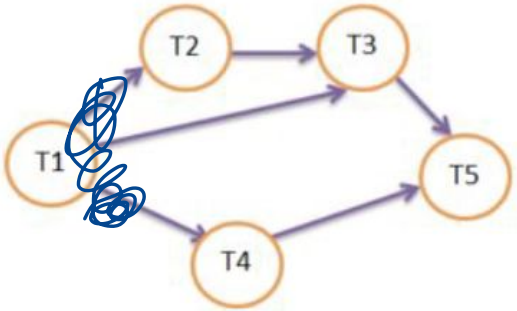
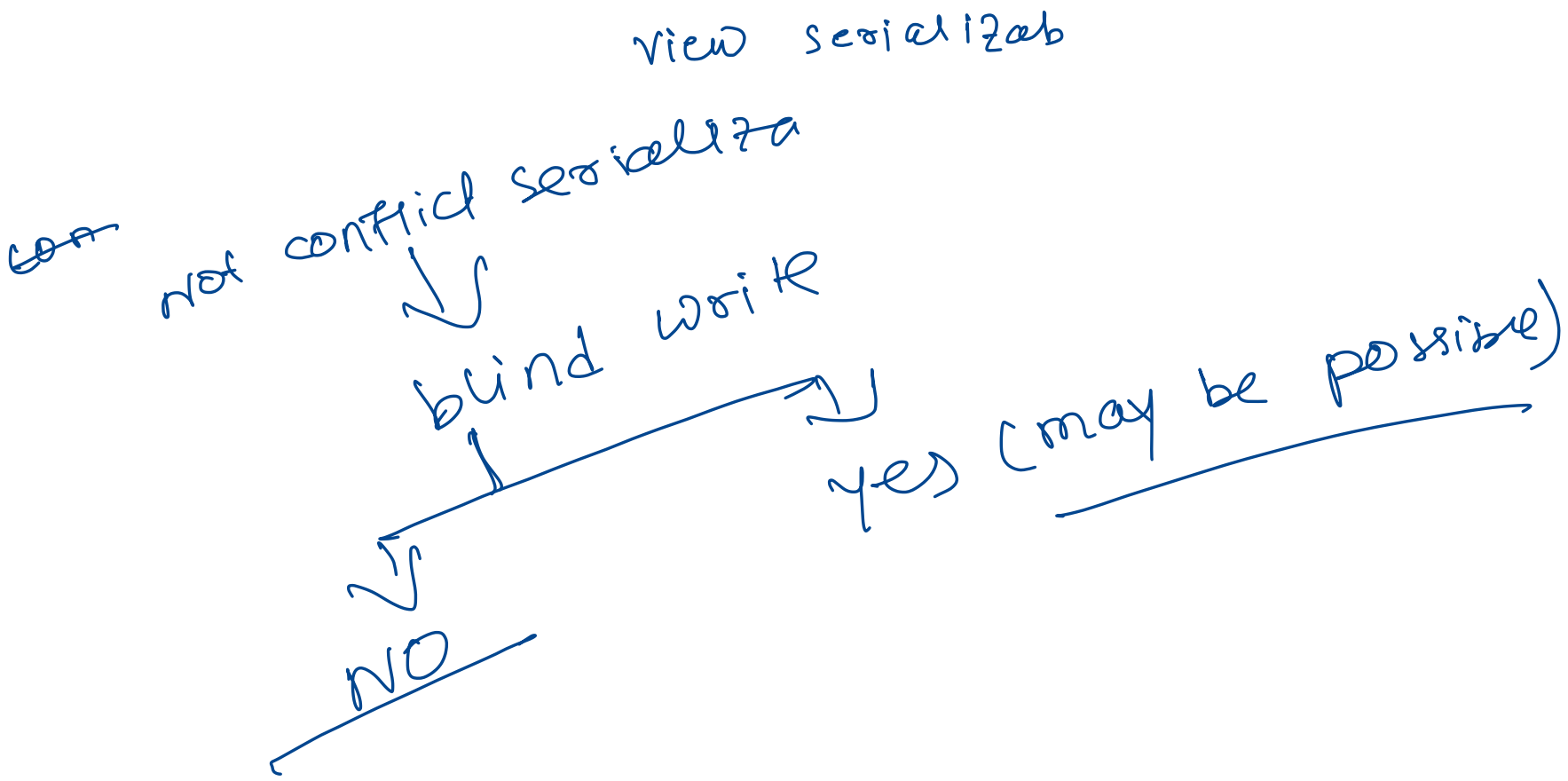


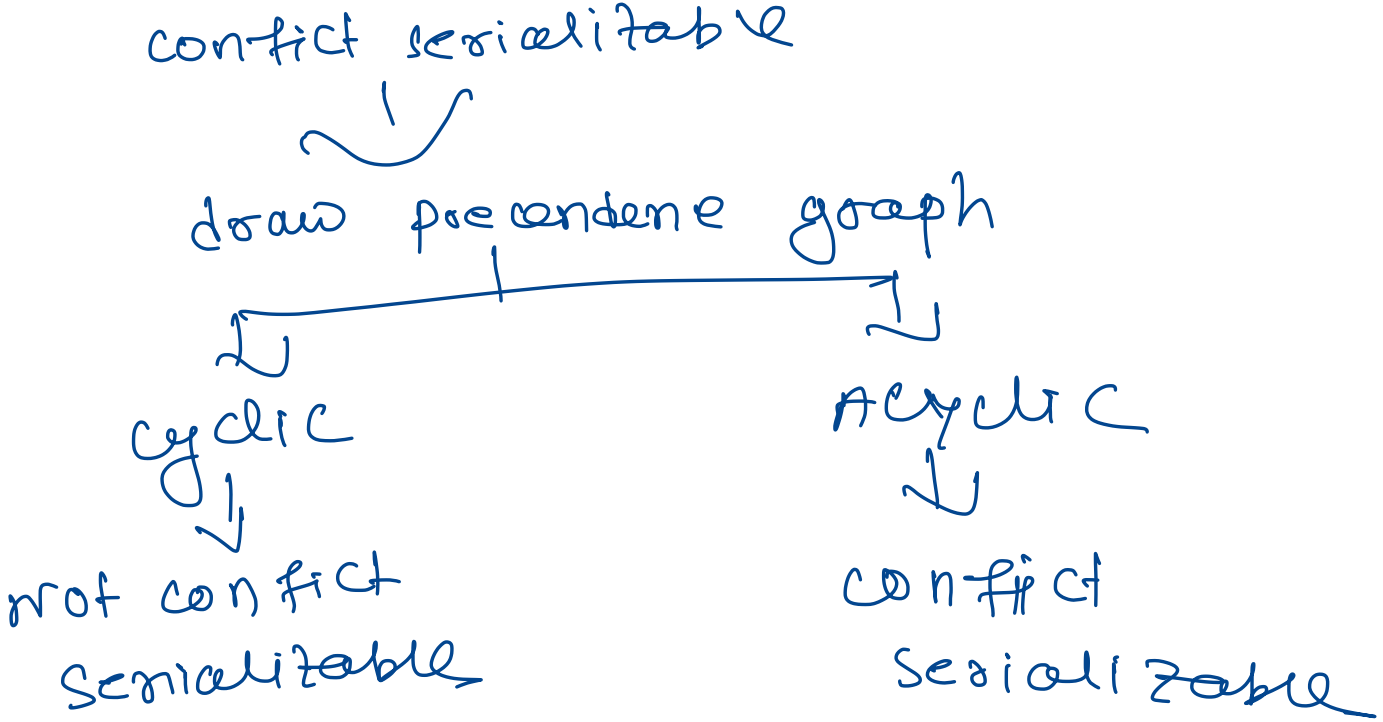

Figure 2: Precedence Graph of schedule **S**

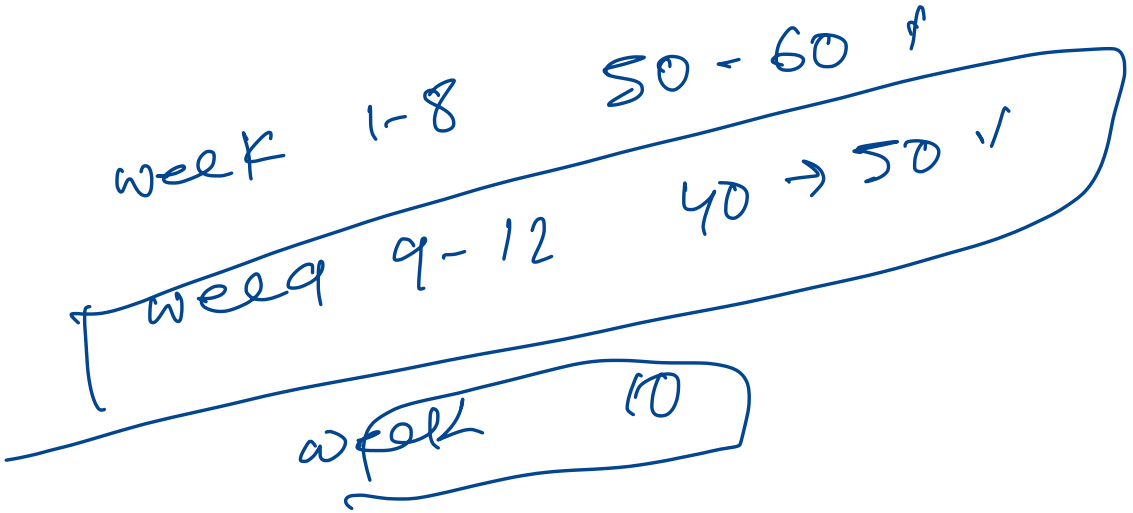
[MCQ : WK-10 : 3 points]

- ○ 0
- ○ 1
- ○ 2
- ○ 3

follow → 2phase lockable → conflict serializable


view serializab
not conflict seriallza
blind writ
yes (may be possible)
NO


conflict serializable
draw precendene graph
cyclic
not conflict serializable
Acyclic
conflict Serializable


week 1-8 50-60 ↑
week 9-12 40 → 50 ↑
week 10