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Unit Code: FIT2094
Applied Class No: Tutorial #1 (Monday) 11:00 - 13:00

Comments for your marker:

All cell entries have the form S(Tn) to represent a shared lock by Tn, X(Tn) to represent an exclusive lock by Tn and Tn wait Tm to represent a wait of Tn due to Tm (where n and m are transaction numbers)

(a)

TIME	TRANS	ACTION	A	B	C	D
0	**T1**	**UPDATE A**	X(T1)			
1	**T1**	**UPDATE B**		X(T1)		
2	**T2**	**READ C**			S(T2)	
3	**T2**	**READ D**				S(T2)
4	**T3**	**UPDATE A**	T3 wait T1			
5	**T2**	**UPDATE C**			X(T2)	
6	**T1**	**ROLLBACK**	X(T3)			
7	**T3**	**UPDATE C**			T3 wait T2	
8	**T2**	**UPDATE B**		X(T2)		
9	**T2**	**UPDATE A**	T2 wait T3			

- Does a deadlock exist in this transaction sequence?

Yes, it exists in the transaction sequence above.

- Explain why you came to this conclusion.

During TIME 7, T3 is waiting for T2 to release and let go of the exclusive lock on C to update C but during TIME 9, T2 is waiting for T3 to release and let go of the exclusive lock on C to proceed with updating B. Since T3 waits for T2 and in turn T2 also waits for T3 so in conclusion, both T2 and T3 are waiting for the opposite side to release the exclusive lock which they won't as they need the opposite side to release the lock to proceed with updating their columns hence, a deadlock exists.

(b)

TRL ID	TRX NUM	PREV PTR	NEXT PTR	OPERATION	TABLE	ROW ID	ATTRIBUTE	BEFORE VALUE	AFTER VALUE
101	601	Null	102	****Start of transaction START	Null	Null	Null	Null	Null
102	601	101	103	UPDATE	PRODUCT	ABC	PROD_QOH	1205	1206
103	601	102	104	UPDATE	PART	A	PART_QOH	567	566
104	601	103	105	UPDATE	PART	B	PART_QOH	98	97
105	601	104	106	UPDATE	PART	C	PART_QOH	549	548
106	601	105	Null	COMMIT ****End of transaction	Null	Null	Null	Null	Null