Introduction to Databases

Transaction Management

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(v26.0)

Problem 1. Is the following schedule conflict serializable? Justify your answer. If it is, give an equivalent serial schedule.

	T_1	T_2	T_3	T_4
1			r(A)	
2		w(A)		
3	r(A)			
4			r(B)	
5			r(C)	
6		w(B)		
7	w(C)			
8				r(C)
9				w(C)

Problem 2. Say whether each of the following schedules is conflict serializable. Justify your answer. If it is, give an equivalent serial schedule.

	T_1	T_2	T_3	T_4
1	s(A)			
2		x(C)		
3	x(B)			
4	u(A)			
5		x(A)		
6				s(B)
7				u(B)
8	u(B)			
9		u(C)		
10			s(C)	
11			u(C)	
12		u(A)		

	T_1	T_2	T_3	T_4
1	s(A)			
2		x(C)		
3	x(B)			
4	u(A)			
5	u(B)			
6		x(A)		
7				s(B)
8				u(B)
9		u(C)		
10			s(C)	
11			u(C)	
12		u(A)		

[*First check whether each schedule satisfies the basic rules of lock-based scheduling*]

Problem 3. Is the following schedule conflict serializable? Justify your answer. If it is, indicate all of the serial schedules equivalent to it.

	T_1	T_2	T_3
1		s(B)	
2	s(C)		
3		s(A)	
4		u(B)	
5			s(A)
6		u(A)	
7	x(B)		
8			u(A)
9	u(C)		
10			x(C)
11			u(C)
12	u(B)		

Problem 4. In the following schedule, consider each line as a request for a lock. Indicate which requests can be granted and whether there are deadlocks. If a deadlock is found, suggest a proper way to resolve it.

	T_1	T_2	T_3	T_4
1	s(A)			
2	x(B)			
3		x(C)		
4				s(B)
5			s(D)	
6			x(A)	
7		x(D)		
8	s(C)			