كلية التقنية الالكترونية
College of Electronic Technology - Tripoli

القســـم: الحاسب الالي   أسئلة الامتحان النهائي   لمادة : تطبيقات قواعد بيانات
لطلبة الفصل: السادس   رمز المادة: CS322   التاريخ: 2022/04/06
اسم الأستاذ: محمد الجعفري   الزمن: ساعتان

للفصل الدراسي : خريف 2021

اسم الطالب : ....   رقم القيد ....

Q1- Circle the correct answer for each of the questions in this section .Make sure to read all the options before choosing the correct answer   **(10 Points)**

1. Which one of the following are the main problems of concurrency control

A. Lost Updates   B. Uncommitted Data

C. Inconsistent Retrievals   D. All of the above

2. The log is a sequence of _____ , recording all the update activities in the database.

A. Log records   B. Records

C. Entries   D. Redo

3. If a transaction does not modify the database until it has committed, it is said to use the _____ technique.

A. Deferred-modification   B. Late-modification

C. Immediate-modification   D. Shadow Paging

4. Which statement is used to retrieve the row from the cursor?

A. Fetch   B. Not found

C. is close   D. is open

5. Which of the following does refer to the size of the data item chosen as the unit of protection by a concurrency control program?

A. Lock   B. Starvation

C. Timestamp   D. Granularity

6. What is the purpose of index in SQL server

A. To enhance the query performance   B. To provide an index to a record

C. To perform fast searches   D. All of the mentioned

7. All lock information is managed by a _____, which is responsible for assigning and policing the locks used by the transactions.

A. scheduler   B. DBMS

C. lock manager   D. locking agent

8. Which of the following concurrency control protocol ensures both conflict serializability and free from deadlock?

A. Time stamp ordering   B. Two Phase locking

C. Both (A) and (B)   D. None of the above

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9. The drawback of shadow paging technique are

A. Commit overhead

B. Data fragmentation

C. Garbage collection

D. All of these

10. Point out the wrong statement

A. We can have an INSERTD OF insert/update/delete trigger on a table that successfully executed

B. DML triggers are used to evaluate data after data manipulation using DML statements

C. INSTEAD OF triggers cause their source DML operation to skip

D. AFTER triggers cause their source DML operation to skip

2- Concurrency Control Techniques   **(5 Points)**

1. Write the difference between Read, Validation, and Write Phases of optimistic based protocol ?

(2 Points)

2. Two interleaved transaction schedules are given below. Identify what type of problems they have

(3 Points)

i.

Time	T_1	T_2
1	read_item(X);	
2	X:=X+N;	
3		X=X+10;
4		write_item(X)

ii.

Time	T_1	T_2
1	read_item(X);	
2	X:=X-N;	
3	write_item(X);	
4		read_item(X)
5		X:X+M;
6		write_item(X);
7	read_item(Y);	
...	...	...
	rollback	

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Q3-Transaction Processing

(7 Points)

1. What is meant by "Isolation" and "Atomicity" ?

(2 Points)

2. Consider the following schedule:

(2.5 Points)

T_1	T_2
BEGIN READ(A) A = A + 50 WRITE(A)	
	BEGIN READ(A) A = A + 200 WRITE(A) READ(B) B = 3 * B WRITE(B) COMMIT
READ(B) B = 12 * B WRITE(B) COMMIT	

Which of the following statements are true or false? Check all that apply

i. The schedule is serial   ....

ii. The schedule is serializable   ....

iii. The schedule is conflict serializable   ....

iv. The schedule is Recoverable   ....

v. The schedule is Cascadeless   ....

3. Draw the precedence graph and determine whether the schedule is conflict serializable. If the schedule is conflict serializable, write the conflict equivalent serial schedule of transactions

(2.5 Points)

r1(A), w1(A), r2(B), w2(B), r3(C), w3(C), r2(C), w2(C), r1(B), w1(B), c1, c2, c3

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Q4- Recovery Management (10 Points)

1. Consider the following recovery log:

< START T1 >
< T1, A, 10, 30>
< START T2 >
< T2, B, 5, 17 >
< T1, C, 7, 10 >
< START T3 >
< T3, D, 12, 18 >
< COMMIT T1 >
< CHECKPOINT ? >
< START T4 >
< T2, E, 5, 12 >
< T3, F, 1, 5 >
< T4, G, 15, 17 >
< COMMIT T3 >
< CHECKPOINT ? >
< START T5 >
< T5, H, 3, 50 >
< T5, H, 3 >
< ABORT T5 >

i. After the analysis pass, which transaction IDs are in the undo list and which are in the redo list? **(3 Points)**

ii. What are the values of A, B,C,D,E,F,G and H after the algorithm has finished ? **(2 Points)**

2. Write the difference between Deferred database modification and Immediate Database modification of recovery management ? **(3 Points)**

3. Explain about different storage media in database. **(2 Points)**

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Q5- Stored Procedures & Trigger   (8 Points)

Table Name : Rentals				
Rental_id	Start_Rental	End_Rental	ApartmentNo	ClientID
1	01-06-2021	31-08-2022	PG4	CR76
2	01-09-2021	01-09-2022	PG16	CR76
3	01-09-2021	10-01-2022	PG4	CR56
4	10-10-2021	01-12-2022	PG36	CR56
5	01-01-2021	10-08-2022	PG16	CR56

Table Name : Apartments			
ApartmentNo	Apartment_Address	Rental	OwnerID
PG4	Tripoli	350	CO40
PG16	Benghazi	450	CO93
PG36	Misrata	375	CO93

. Consider a database containing the tables above and answer the following questions:

i. Create **UpdateApartment** stored procedure to update Apartment Address , Rental for 555 apartment No = PG16 , consider all business required.   (4 Points)

ii. Create the **InsertRental** trigger to prevent reserving an apartment at the same time   (4 Points)

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