Database management system

IT-344

Assignment 02

Deadline: Day 22/03/2017 @ 23:59

[Total Marks: 8/2 = 4]

Student Details:

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Instructions:

- This Assignment must be submitted on Blackboard via the allocated folder.

- Email submission will not be accepted.

- You are advised to make your work clear and well-presented, marks may be reduced for poor presentation.

- You MUST show all your work.

- Late submission will result in ZERO marks being awarded.

- Identical copy from students or other resources will result in ZERO marks for all involved students.

- Convert this Assignment to PDF just before submission.

Question One

3 Marks

Consider a checkpoint protocol and the following operations in the log.

[start_transaction,T4]
[Write_Item,T4,D,20,30]
[start_transaction,T1]
[Commit, T4]
[Write_Item,T1,C,5,9]
[Checkpoint]
[start_transaction,T2]
[Write_Item,T2,B,3,9]
[Commit, T2]
[start_transaction,T3]
[Write_Item,T3,C,9,15]
…CRASH….

when a crash happens, the recovery system tries to recover by using both undo and redo operations. what are the transaction(s) of the undo list and the redo list?

UNDO	REDO
Transaction. T3 Transaction. T1	Transaction. T2

No need to mention transaction 4 because it has been saved already.

Question Two

5 Marks

A) List the main control measures that are used to provide security of data in databases?

1. **Access Control**

2. **Inference Control**

3. **Flow Control**

4. **Data Encryption**

B) Explain briefly about Access Protection, User Accounts, and Database Audits

Access protection, user account, and database audits. There's an example in the book explained the main idea of all them. So, the access protection and the user's account protect the database from the unauthorized persons, so the database administrator will create an account (account number and password) for users.

Users now can enter the database using this account by entering the account number and password, the database management system will check the entered data if it valid or not and then will give the permission for each user to access the database.

Database audits are reviewing the logs to check all accesses and operations in the database that been applied during a certain time.

Question Three

(3 Marks)

What are the main potential advantages of distributed database?

1. **Improve the ease and the flexibility of application development.**

2. **Increase availability and reliability.**

3. **Improve the performance.**

4. **Expansion.**

Question Four

5 Marks

What are triggers? How to invoke a trigger on demand? List the four instances when triggers are appropriate?

Triggers are techniques to specify certain types of active rules. It executed when a specified condition occurs during insert - delete - update. It can't be invoked in demand, there must be an action to the table (insert/ delete/ update).

The four instances:

1. in the security

2. In maintenance

3. In the database consistency

4. In the essential backup

*Learning
Outcome(s):*

Question Five

5 Marks

Consider the project relation:

Project

PNo	Pname	Budget	Location
p1	Database develop	250,000	Riyadh
p2	Maintenance	125,000	Jeddah
p3	CAD	170,000	Abha
p4	Design	200,000	Madinah
p5	instrumentation	100,000	Qasim

1. apply horizontal fragmentations:

a. **table1 projects with budget less than 150,000.**

PNo	Pname	Budget	Location
p2	Maintenance	125,000	Jeddah
p5	instrumentation	100,000	Qasim

b. **table2 projects with budget greater than or equal to 150,000.**

PNo	Pname	Budget	Location
p1	Database develop	250,000	Riyadh
p3	CAD	170,000	Abha
p4	Design	200,000	Madinah

خطأ! لم يتم تعريف النمط.

2. apply vertical fragmentations:

a. **table1 information about project budget.**

PNo	Budget
p1	250,000
p2	125,000
p3	170,000
p4	200,000
p5	100,000

b. **table2 information about projects names and locations.**

PNo	Pname	Location
p1	Database develop	Riyadh
p2	Maintenance	Jeddah
p3	CAD	Abha
p4	Design	Madinah
p5	instrumentation	Qasim

**************************END OF QUESTIONS***********************