L19 : Transactions

1-Tut : MCQ - 1

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When dealing with transactions, any DBMS should be capable of ensuring:

Options

This problem has only one correct answer

Parts of a transaction are not lost due to a failure.
Transactions are free from interference from other users.
Transactions do not make the database inconsistent.
All of the above.

Correct Answer : D

Solution Description

When dealing with transactions, any DBMS should be capable of ensuring that:

1. Transactions are free from interference from other users.

2. Parts of transactions are not lost due to program failures.

3. Transactions don't make the database inconsistent.

4. Incomplete transactions never occur in the database.

2-Tut : MCQ - 2

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Which of the following is a part of ACID properties of transactions?

Options

This problem has only one correct answer

a. Duration
b. Atomicity
c. Isolation
d. Only a,b
e. Only b,c

Correct Answer : e

Solution Description

ACID stands for:
1. **Atomicity** : It is also known as the "All or nothing rule". It ensures that either the transaction occurs completely or it will not occur at all.

2. **Consistency** : It ensures that data remains consistent before and after the transaction.

3. **Isolation** : It ensures that parallel transactions remain consistent when they are converted into serializable form.

4. **Durability** : It ensures that data is not lost during the transactions.

3-Tut : MCQ - 3

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If the system crashes just after the transaction is executed, we don't lose the changes made to the database due to:

Options

This problem has only one correct answer

A. Transactions endurance
B. Transactions are atomic, so they are saved
C. Durability property
D. Isolation property, as the transaction is isolated it doesn't get affected by anything happening in the surroundings.

Correct Answer : C

Solution Description

Durability property ensures all the changes or updates to the database have been recorded and have been stored and will be never lost even if the system crashes.

On the other hand, Atomic property tells that a transaction will happen only when it will be performed entirely or will not be executed at all. Isolation ensures that the transactions are executing independently, i.e. when one transaction is being done, it won't be interrupted by the other one. However, multiple transactions can happen simultaneously, given that each transaction is unaware of the other concurrently executing transactions.

4-Tut : MCQ - 4

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At which state is transaction considered permanent in the database?

Options

This problem has only one correct answer

Save
Committed
Rolled
Loaded

Correct Answer : B

Solution Description

When the updates are made permanent on the database, then the transaction is said to be in the committed state. Whatever changes we make during the transaction, the database saves that data in the hard disk and these changes are visible to the user.

Note: Rollback can't be done from here. At this state, a new consistent state is achieved by the database.

5-Tut : MCQ - 5

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In case of any shut down during transaction before commit, which of the following statements is done automatically?

Options

This problem has only one correct answer

Flashback
Rollback
Commit
View

Correct Answer : B

Solution Description

In case of any shutdown during transaction before commit, the transaction shifts from a partially committed state to a failed state. After a transaction reaches the failed state, Rollback operations occur and it reaches the aborted state. Rollback operation **'UNDO'** the changes made during the transaction.

6-Tut : MCQ - 6

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If the checks by the database recovery system fails, then the transaction is in which state?

Options

This problem has only one correct answer

Active
Partially committed
Committed
Failed

Correct Answer : D

Solution Description

1.**Active State**:- The very first state of the life cycle of the transaction, all the read and write operations are being performed. If they execute without any error the transaction comes to a 'partially committed' state, although if any error then it leads to a 'failed' state.

2. **Partially Committed State**:- After the transaction is executed the changes are saved in the buffer in Main Memory. If the changes made are permanent on the database then the state will transfer to the 'committed' state and if there is any kind of failure, The transaction will go to the 'failed' state.

3. **Committed State**:- When the updates are made permanent on the database. Then the transaction is said to be in the committed state. Rollback can't be done from committed states. At this state, a new consistent state is achieved by the database.

4. **Failed State**:- When a transaction is being executed and some failure occurs. Due to these failures, it becomes impossible to continue the execution of a transaction. This results in the entrance of transactions in the failed state. The transaction can reach this state from an Active or Partially committed state.

7-Tut : MCQ - 7

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The state in which the transaction is, while it's still executing is/are:

Options

This problem has only one correct answer

a. Start
b. Active
c. Failed
d. Partially Committed
e. Only a,d
f. Only b,d
g. Only b,c,d

Correct Answer : f

Solution Description

When the transaction is executing, it can only be in two states

1. **Active State** :- The very first state of the life cycle of the transaction, all the read and write operations are being performed and if they execute without any error the transaction comes to a 'partially committed' state, although if any error then it leads to 'failed' state.
Note: All the changes made by the transaction now are stored in the buffer in the main memory.

2. **Partially Committed State**:- After the transaction is executed the changes are saved in the buffer in Main Memory. If the changes made are permanent on the database then the state will transfer to the 'committed' state and if there is any kind of failure, The transaction will go to the 'failed' state

8-Tut : MCQ - 8

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When a transaction doesn't complete it's execution successfully. We call it:

Options

This problem has only one correct answer

Terminated
Closed
Failed
Aborted

Correct Answer : D

Solution Description

Aborted State: When the transaction reaches the failed state, all the changes made in the buffer are reversed. After that the transaction rollback completely. The transaction reaches an aborted state after that. After reaching the aborted state, the failed transaction get removed from the database