**Database Management System – cs422 DE**

**Assignment 7 – Week 10 & 11**

------------------------------------------------------------------------------------------------------------------------------------------

**This assignment is based on lecture 9 (chapter 22).**

* Submit your *own work* on time. No credit will be given if the assignment is submitted after the due date.
* Note that the completed assignment should be submitted in .doc, .docx, .rtf or .pdf format only.
* In MCQs, if you think that your answer needs more explanation to get credit then please write it down.
* You are encouraged to discuss these questions in the Sakai forum.

1. \_\_\_\_\_\_\_ ensures that once transaction changes are done, they cannot be undone or lost, even in the event of a system failure.
   1. Atomicity
   2. Consistency
   3. Durability
   4. Isolation

ANS:

1. Deadlocks are possible only when one of the transactions wants to obtain a(n) \_\_\_\_\_\_ lock on a data item.
   1. Binary
   2. Shared
   3. Exclusive
   4. Complete

ANS:

1. If several concurrent transactions are executed over the same data set and the second transaction updates the database before the first transaction is finished, the \_\_\_\_\_\_ property is violated and the database is no longer consistent.
   1. Atomicity
   2. Consistency
   3. Durability
   4. Isolation

ANS:

1. When a program is abnormally terminated, the equivalent of a \_\_\_\_ command occurs.
   1. COMMIT
   2. ROLLBACK
   3. QUIT
   4. EXIT

ANS:

1. The deadlock state can be changed back to stable state by using \_\_\_\_\_\_\_\_\_\_\_\_\_ statement.
   1. COMMIT
   2. ROLLBACK
   3. SAVEPOINT
   4. DEADLOCK

ANS:

1. When transaction Ti requests a data item currently held by Tj , Ti is allowed to wait only if it has a timestamp smaller than that of Tj (that is, Ti is older than Tj ). Otherwise, Ti is rolled back (dies). This is
   1. Wait-die
   2. Wait-wound
   3. Wound-wait
   4. Wait

ANS:

1. Explain what is meant by a transaction. Why are transactions important units of operation in a DBMS?

ANS:

1. Describe, with examples, the types of problem that can occur in a multi-user environment when concurrent access to the database is allowed.  
   ANS:
2. Give full details of a mechanism for concurrency control that can be used to ensure the types of problems discussed in the above question cannot occur. Show how the mechanism prevents the problems illustrated from occurring. Discuss how the concurrency control mechanism interacts with the transaction mechanism.  
   ANS:

1. Explain the concepts of serial, non-serial, and serializable schedules. State the rules for equivalence of schedules.

ANS:

1. What is a timestamp? How do timestamp-based protocols for concurrency control differ from locking based protocols?  
   ANS:
2. What is Thomas’s write rule and how does this affect the basic timestamp ordering protocol?  
   ANS: