Unit 5

Transaction Management: Transaction Concept, A Simple Transaction Model, Transaction Atomicity and Durability, Serializability, Transaction Isolation and Atomicity, Transaction Isolation Levels, Implementation of Isolation Levels. Concurrency Control: Lock-Based Protocols, Deadlock Handling. Recovery System: Failure Classification, Storage, Recovery and Atomicity, Recovery Algorithm

1. Explain in detail about the ACID properties in transaction processing.
2. Explain properties of a transaction with state transition diagram.
3. Discuss the problems that can occur when concurrent transactions are executed.
4. Discuss the different types of failures. What is meant by catastrophic failure?
5. Discuss the actions taken by the read_item and write_item operations on a database.
6. What is two-phase locking protocol? How does it guarantee serializaility?
7. What is a schedule? Explain with example serial, non serial and conflict serializa schedules.
8. Write short notes on
   a) Write ahead log protocol
   b) Time stamp Ordering
9. Describe the wait-die and wound-wait protocols for deadlock prevention.
10. Discuss the deferred update technique of recovery. What are the advantages disadvantages of this technique?
11. Describe the shadow paging recovery technique.
12. Describe the three phases of the ARIES recovery method.
13. Which of the following schedules is (conflict) serializable? For each serializable schedule, determine the equivalent serial schedules.
    a. r1(X); r3(X); w1(X); r2(X); w3(X);
    b. r1(X); r3(X); w3(X); w1(X); r2(X);
    c. r3(X); r2(X); w3(X); r1(X); w1(X);
    d. r3(X); r2(X); r1(X); w3(X); w1(X);
14. Discuss the types of problems that might be encountered if transactions are allowed to run concurrently.
15. Why is concurrency control needed? Discuss the types of problems that might be encountered if transactions are allowed to run concurrently.
16. Write a note on binary locks and explain with an example.
17. Describe the characteristics of Serializability in transaction.
18. Mention time stamp ordering algorithm with example.
19. Constructing the precedence graphs for sample schedules of your choice, explain how to test for conflict serializability