Data Basemanagement System
Assignment-4(ce/se-iv)

1. What are the roles of Assertions and Triggers in SQL? Consider following bank database
   Branch-schema = (*branch-name, branch-city, assets*)
   Loan-schema = (*loan-number, branch-name, amount*)
   Write an assertion for the bank database to ensure that the Assets value for the Perryridge branch is equal to the sum of all the amounts lent by the Perryridge branch.
2. What is Normalization and why it is done? Give an example of a relation schema R and a set of dependencies such that R is not in 2NF and normalize it into 2NF.
3. What do you mean by Integrity Constraints? Explain its types.

4. Give an example of a relation schema R and a set of dependencies which illustrates the importance of 4NF.
5. State and explain with example about functional dependency ,transitive dependency and multivalued dependency.
6. Give an example of a relation schema R and a set of dependencies such that R is not in 3NF and normalize it into 3NF.
7. How security can be granted using view explain. What are two advantages of encrypting data stored in the database?
8. What is Log-Based Recovery? Compare the deferred- and immediate-modification versions of the log-based recovery scheme in terms of ease of implementation and overhead cost.
9. What is Log-Based Recovery? Explain Deferred Database modification and Immediate Database modification with an illustration.
10. Explain the basic steps in query processing.

11. Explain the distinction between the terms *serial schedule* and *serializable schedule*. Consider the following two transactions:

T_{31}: read(A);
read(B);
if $A = 0$ **then** $B := B + 1$;
write(B).
T_{32}: read(B);
read(A);
if $B = 0$ **then** $A := A + 1$;
write(A).

Add lock and unlock instructions to transactions T_{31} and T_{32}, so that they observe the two- phase locking protocol.

12. What do you mean schedule and serialzability? What are view serialization schedules?
13. What do you mean by a schedule? When schedule is called serializable? What are conflict serialization schedules?
14. What do you mean by concurrency control? Describe Two phase locking Protocol.
15. Construct a B+-tree for the following set of key values:
    (2, 3, 5, 7, 11, 17, 19, 23, 29, 31)
    Assume that the tree is initially empty and values are added in ascending order. Construct B+-trees for the case where the number of pointers that will fit in one node is **Six**. Also show the form of the tree after insertion of **9**.
16. Construct a B+-tree for the following set of key values:

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(2, 3, 5, 7, 11, 17, 19, 23, 29, 31)

Assume that the tree is initially empty and values are added in ascending order. Construct B+-trees for the case where the number of pointers that will fit in one node is **Four**. Also show the form of the tree after deletion of 23.

17. What are the reasons for building distributed database systems. Also discuss some of the disadvantages of distributed database.
18. Explain about sequential file access and hash index with examples.
19. Define Referential-integrity constraints. Consider a database that includes the following relations:

    salaried-worker (*name, office, phone, salary*)
    hourly-worker (*name, hourly-wage*)
    address (*name, street, city*)

    Suppose that we wish to require that every name that appears in *address* appear in either *salaried-worker* or *hourly-worker*, but not necessarily in both.

    a. Propose a syntax for expressing such constraints.

    b. Discuss the actions that the system must take to enforce a constraint of this form.
20. What is importance of trigger? Write an SQL trigger to carry out the following action: On **delete** of an account, for each owner of the account, check if the owner has any remaining accounts, and if she does not, delete her from the *depositor* relation.