Database Management System

Question Bank

Module 1

Illustrate the two-tier and three-tier architectures of database systems

List the various users of DBMS and explain its functions. Also explain the roles & responsibilities of DBA.

Discuss the different levels of database abstraction with example

Explain the concept of generalization, specialization and aggregation

What is data independence and give its importance

Illustrate various database data models with neat diagram

Design ER diagram for college management system

Module 2

Demonstrate syntax of DDL and DML commands
Analyze different types of constraints in SQL
Explain concept of referential integrity, how it maintains data consistency
Define the terms Super key, candidate key, primary key and foreign key. Give an example for each
Explain various types of JOIN expressions with example
Discuss the concept of database trigger with example
Explain different relational algebra operators with suitable example

Module 3

Define Normalization? Explain 1NF, 2NF, 3NF and 4NF with suitable example

Explain the different types of functional dependencies with example

Discuss the rules of interference or Armstrong axioms with supporting rules. Compute $(ABE)^+$ and $(AB)^+$ for the relation R = (A,B,C,D,E) with following functional dependancy.
{A -> BC
CD -> E
B -> D
E -> A}

Discuss dangling tuple. What techniques can be used to prevent them

Find the canonical cover for set of Function Dependency FD = { V → W, VW → X, Y → VXZ }
for a relational Schema R(V, W, X, Y, Z)

Module 4

Define a Transaction? List the ACID properties of transaction
Write short note on Conflict Serializability

Write short not on View Serializability

Explain two phase commit protocol in detail

Discuss how serializability is used to enforce concurrency control in database system

S1: r1(X);r3(Y);r3(X);r2(Y);r2(Z);
w3(Y);w2(Z);r1(Z);w1(X);w1(Z)
S2: r1(X); r3(Y); r2(Y); r3(X); r1(Z);
r2(Z); w3(Y); w1(X); w2(Z); w1(Z)
Analyze which one of the schedules is conflict-serializable?

Illustrate the process of log based recovery

Discuss & differentiate time stamp and validation based protocols.

Outline the reason for occurance of deadlock and suggest its prevention method.

Module 5

Discuss in brief Relational Database Management Systems like Oracle,Postgres and MySQL

Explain the concept of table spaces, segments, extents and block

Write short note on Distributed Database

Explain in short Hierarchical queries, inline queries and flashback queries