CORE-IX DATABASE MANAGEMENT

LONG QUESTIOS:

1. What is database management, and why is it crucial in today's information-driven world?
2. Explain the fundamental components of a database management system (DBMS), including data, schema, and query language.
3. Discuss the differences between a database and a database management system. Why are both elements essential for efficient data management?
4. Describe the relational database model and its key concepts, such as tables, rows, columns, and relationships.
5. What is a database schema, and how does it define the structure and organization of data within a database?
6. Examine the role of Structured Query Language (SQL) in database management. Provide examples of common SQL commands and queries.
7. Discuss the process of database design. What are the steps involved in creating a well-structured and efficient database?
8. Explain the principles of data normalization in database design. How does normalization enhance data integrity and minimize redundancy?
9. Describe the types of database relationships, including one-to-one, one-to-many, and many-to-many relationships. How are these relationships implemented in a relational database?
10. What is database indexing, and why is it important for optimizing query performance? How do you create and manage database indexes?
11. Discuss the concepts of data integrity and data consistency in database management. How do DBMSs enforce data integrity constraints?
12. Examine the process of database backup and recovery. What strategies can be employed to ensure data security and availability?
13. What are the challenges and considerations in managing large-scale databases, including distributed databases and NoSQL databases?
14. Explain the concept of database security. How do you protect databases from unauthorized access and data breaches?
15. Discuss the role of database administrators (DBAs) in database management. What are their responsibilities in maintaining and optimizing databases?

SHORT QUESTIONS:

1. What is database management?
2. Define a database.
3. What is a DBMS?
4. Explain the purpose of a database schema.
5. Describe a table in a relational database.
6. What are rows and columns in a database table?
7. What is a primary key in a database?
8. Define a foreign key.
9. What is data normalization in database design?

10. Explain the concept of data redundancy.
11. What is a SQL query?
12. Give an example of a SELECT statement in SQL.
13. What is a database index?
14. How does indexing improve database query performance?
15. Define data integrity in the context of databases.
16. Explain the difference between a one-to-many and a many-to-many relationship in databases.
17. What is a database transaction?
18. Define ACID properties in database transactions.
19. What is data warehousing?
20. Explain the concept of data mining in databases.
21. What is a NoSQL database?
22. Describe the CAP theorem in NoSQL databases.
23. What is a database backup?
24. How often should database backups be performed?
25. Explain the concept of data recovery in database management.
26. What is database replication?
27. Define database sharding.
28. What is the purpose of a database trigger?
29. Explain the concept of data scrubbing.
30. What is a database schema migration?
31. Describe the concept of database partitioning.
32. What are stored procedures in a database?
33. Define data modeling in database design.
34. What is a database view?
35. Explain the concept of database concurrency control.
36. What is data masking in database security?
37. Define role-based access control (RBAC) in databases.
38. What is a database audit trail?
39. Explain the concept of referential integrity in databases.
40. What role do database administrators (DBAs) play in database management?