Database Management Systems
Question Bank

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1. What is DBMS ? Enlist the characteristics of DBMS.

2. Explain advantages of DBMS over file system.

3. Draw and explain overall structure of database system.

4. Explain mapping cardinality representation in ER diagram with the help of illustrative examples.

5. Construct an ER diagram for library management system.

6. Explain aggregate function used in SQL with suitable examples.

7. Consider , the following database,
   Student(RollNo, Name, Address)
   Subject (Sub_code, Sub_name)
   Marks (Roll_no, Sub_code, Marks)

   Write the following queries in SQL.
   Find the average marks of each student, along with name of Student

8. Write SQL statement for the following (any five)
   Consider the following database
   pilot(pid, pname)
   flight(fid, ftype, capacity)
   route(pid, fid, from_city, to_city)
   i) List the details of flights having capacity more than 300
   ii) List the flights between 'Surat' and 'Mumbai'
   iii) List the names of pilots who fly from 'Pune'
   iv) List the route on which , pilot 'Mr Kapoor ' flies
   v) List the pilots whose names . starts with letter 'A %' but does not end with letter 'A'
   vi) List the name of pilots who fly 'boing 737' type of flights.

9. What are the different set Operations used in SQL? Explain

10. Write a PL/SQL block of code to calculate the factorial value of number.

11. Write PL/SQL trigger for the following requirement:
    Event: Deletion of ro from stud(roll_no, name, class) table
    Action: After deletion of values from stud table , values shold be inserted into cancel_admission(roll_no, name) table.
    Note: For every row to be deleted , action should be performed.
12. List the advantages of DBMS?
13. List the database Applications?
14. Define instances and schemas of database?
15. Discuss Data Independence?
16. Explain database Access for applications Programs
17. Define (i) Database (ii) DBMS
18. Explain about Database storage structure?
19. Discuss Transaction management?
20. Explain the Query Processor?
21. Define (i) Entity (ii) Attribute
22. Define Relationship and Relationship set?
23. Discuss about Data Definition language?
24. Discuss about Data Manipulation language?
25. Explain about querying relational data?
26. Explain the History of Database Systems?
27. Discuss how can you change the data in the table?
28. List various types of attributes?
29. Discuss How can you alter and destroy tables?
30. Explain data model and list the types of data model used?
31. List the disadvantages of file processing system?
32. Give the levels of data abstraction?
33. Define instance and schema?
34. Consider the following tables:Employee (Emp_no, Name, Emp_city)Company (Emp_no, Company_name, Salary)

    i.Write a SQL query to display Employeename and company name.
    ii.Write a SQL query to display employeename, employee city ,company name andsalary of all the employees whose salary>10000

iii. Write a query to display all the employees working in "XYZ company

35. Consider the following relational schemaEmployee (empno,name,office,age)Books(isbn,title,authors,publisher)Loan(empno, isbn,date) Write the following queries in relational algebra.

    a.Find the names of employees who have borrowed a book Published byMcGraw-Hill.
    b.Find the names of employees who have borrowed all books Published byMcGraw-Hill.
    c.Find the names of employees who have borrowed more than five different books published by McGraw-Hill.
    d.For each publisher, find the names of employees who have borrowed more than five books of that publisher
36. Design Entity Relationship Model using ER Diagram with Extended ER features for Online Book Shopping Database application. Consider different entities, entity set, attributes, and constraints
37. What is Data Abstraction? Explain various levels of data abstraction in Database.
38. Define database view with suitable example?
39. Draw the ER Diagram which model University Database i) List the entity sets and their primary keys ii) Extend the ER Diagram using aggregation to model the case where we want to record evaluations of a student by a guide on a project
40. Draw of System Architecture of DBMS?
41. Differentiate between database system and file system
42. Draw ER Diagram for Insurance Database? Show weak Entity Set and Strong Entity Sets too.
43. Convert ER Diagram into Table
44. What is Physical and Logical Data Independence?
45. List the roles of Database Administrator?
46. Explain Referential Integrity Constraint with suitable Example
47. Differentiate between where and Having Clause 3 Differentiate between truncate table and delete from table.
48. Explain Group By clause with suitable example
49. Write the following inserts, deletes or updates in SQL, using the university schema.
    a. Increase the salary of each instructor in the Comp. Sci. department by 10 %.
    b. Delete all courses that have never been offered (that is, do not occur in the section relation).
    c. Insert every student whose tot cred attribute is greater than 100 as an instructor in the same department, with a salary of $10,000.

50. Suppose that we have a relation marks(ID, score) and we wish to assign grades to students based on the score as follows: grade F if score < 40 , grade C if 40 ≤ score < 60, grade B if 60 ≤ score < 80, and grade A if 80 ≤ score. Write SQL queries to do the following: a. Display the grade for each student, based on the marks relation. b. Find the number of students with each grade. 7
51. Consider relational schema Employee (Empno, Ename, DeptNo, Salary), Department(DeptNo, Dname) Write SQL Queries for following questions (any two)
    i) List Employee Names of Computer Department
    ii) Find average salary of each department
    iii) Find Department name of employee name 'Amit' 8 Write PL-SQL Function which will delete the record whose number is sent to function as a parameter
52. Consider following database Cricket_play(p_id, Name, Address) Matches(Match_code, match_date, match_place) Score(p_id, match_code, score) Write following queries in SQL
    i) List player name, match_date, match_place, and score of each player
    ii) List all those players, whose maximum score is higher than 50 10 Explain Procedure in PL-SQL with suitable Example.
53. Define DBA. Discuss roles and responsibilities of DBA
54. Write a short note on Data Independence
55. Draw architecture of DBMS and explain in short.
56. List four significant differences between file processing system and database management system.
57. Draw ER diagram for Airline reservation system. Assume suitable data.
58. Draw ER diagram for Hotel Management System. Assume suitable data.
59. Design an EER schema for a BANK database.
60. Each bank can have multiple branches, and each branch can have multiple accounts and loans. Bank keeps the track of different types of Accounts (Saving_account, Checking_account), Loans(Car_loans, Home_loans), each account's Transaction(deposit, withdrawl, check) and each loan's Payments, both of these include the amount, date and time.Assume suitable data.
61. Explain the following relational algebra operations with examples.
    i. Cartesian Product
    ii. Generalized Projections
    iii. Natural Join
    iv. Union
    v. Set intersection
    vi. Aggregation operator
    vii. Select

viii. Project
ix. Rename

62. Design an EER diagram by showing specialization or generalization relationship . Schema: Person(Employee, Customer), Employee (Secretary, Technician, Engineer), Company. Assume suitable data.
63. Discuss DBMS System structure with suitable diagram.
64. Suppose there is a banking database which comprises following tables :
Customer(Cust_name, Cust_street, Cust_city)
Branch(Branch_name, Branch_city, Assets)
Account (Branch_name, Account_number, Balance)
Loan(Branch_name, Loan_number, Amount)
Depositor(Cust_name, Account_number)
Borrower(Cust_name, Loan_number)
1. Find the names of all the customers who have taken a loan from the bank and also have an account at the bank.

2. Find all loans of over Rs.1200

3. Find the loan number for each loan of an amount greater than Rs.1200

65. What is an attribute? Explain the different types of attributes with examples.
Suppose there is a banking database which comprises following tables :
Customer(Cust_name, Cust_street, Cust_city)
Branch(Branch_name, Branch_city, Assets)
Account (Branch_name, Account_number, Balance)
Loan(Branch_name, Loan_number, Amount)
Depositor(Cust_name, Account_number)
Borrower(Cust_name, Loan_number)
1. Find the name of all customers who have a loan, an account, or both, from the bank.
2. Find the names of all customers who have a loan at the Perryridge branch.
3. Find the largest account balance Rename account relation as d
4. Find the names of all customers who have a loan at the Perryridge branch but do not have an account at any branch of the bank.

66. Convert ER diagram of Library Management system into relational model.
67. Convert ER diagram of Hotel management system into Relational Model
68. Explain the constraints on specialization and generalization.
69. Convert ER diagram of Airline reservation system into Relational Model

70. Explain ACID properties of transaction.
71. Explain log based recovery.
72. Explain deadlock? How it is detected?
73. Explain time stamp based protocol.
74. Explain lossless join decomposition and dependency preserving decomposition.
75. Make the use of SQL constructs, consider following database schema:

    Book(bid,title,author,cost)
    Store(store_no, city,state,inventory_val)
    Stock(store_no, bid, quantity)
    Write SQL queries for following queries:
    i. Modify the cost of DBMS books by 10%
    ii. Find the author of the books which are available in Mumbai store
    iii. Find the title of the most expensive book.
    iv. Find the total quantity of books in each store Add a new record in Book table(assume values as per requirements)
76. Make the use of SQL constructs, write SQL queries for the given database

    Employee(eid,e_name,street,city)
    Works(eid,cid,salary)
    Company(cid,c_name,city)
    Manager(eid,m_name)
    i. Find the names of all employees having 'S' as first letter in their names.
    ii. Display annual salary of all the employees.
    iii. Find the name, street and city of all employees who work for "Accenture" and earn more than 30000
    iv. Give total number of employees.
    v. Delete a record of manager whose name is Jones.
77. Make the use of SQL constructs, write SQL queries for the following database.

    Department(did,dname,mgrid,loc_id)
    Location(loc_id,street,pincode,city,state,cid)
    Employee(eid,fname,lname,email,phno,jobid,mgrid, date,salary,commission,did)
    i. Display department no, last name, department name for all employees.
    ii. Create unique listing of all jobs that are in department, also include location of department.
    iii. Display last name, department name, location id and city of all employees who earn commission.

iv. Display the difference between highest and lowest salary and label output as "Difference"

v. List department id from department that do not contain jobid 20 using set operations.

78. Discuss different types of deadlock prevention scheme.
79. Apply the concept of normalization, identify following relation is in 2NF or not.
    R(ABCDEF)
    FD={C->F,E->A,EC->D,A->B}.
80. Apply the concept of normalization, identify following relation is in 3NF or not.
    R(ABCD)
    FD={AB->C,C->D}
81. Discuss lock based protocols.
82. What is normalization? Explain 1NF, 2NF, 3NF with examples.
83. What is transaction? Explain ACID properties of it along with state diagram of transaction.
84. Describe triggers in detail with example.
85. Explain integrity constraints in detail.