SARDAR VALLABHBHAI PATEL INSTITUTE OF TECHNOLOGY, VASAD

COMPUTER ENGINEERING DEPARTMENT

SUBJECT: DATABASE MANAGEMENT SYSTEMS (3130703)

Academic Year: 2022-23

SUBJECT CODE: 3130703 **B.E. 3rd Semester**

Mid Semester Exam Question Bank

(Note : This question bank is relevant to mid semester exam and It is given for reference only.)

1. What is database and DBMS? What are the advantages of DBMS?
2. What are the different types of DBMS?
3. What is file system management? What are the advantages and disadvantages offile system management?
4. Explain different components of database environment with a neat diagram?
5. Explain all DBMS functions in detail.
6. Explain costs and risks of database approach.
7. Explain in detail range of applications.
8. With neat sketch explain the structure of DBMS?
9. Explain the characteristics of people who deal with databases?
10. What are business rules? How do you discover them and translate them intodata model components?
11. What are the different types of data models? Explain them in detail.
12. Explain different data models based on degree of abstraction.
13. What is E-R model? Explain.
14. Explain different keys and integrity constraints available in DBMS.
15. What are relational set operators? Explain them in detail.
16. What is a relationship? Explain different types of relationships in detail.
17. What is an entity? What are strong and weak entities and associative entities?
18. What is an attribute? Explain different types of attributes.
19. What is a relationship? Explain weak and strong relationships with examples.
20. What is a degree of relationship? Explain various degrees of relationships in detail.
21. Explain step wise procedure of how do you develop an ER diagram using an example of tiny college.
22. What are various database design challenges while developing an ER diagram?
23. Explain key decisions in physical database design.

24. Explain the steps involved in the database design?
25. Define the following terms: 1.) Entity 2.)Relationship 3.) Keys 4) Descriptive attributes 5.) Primary key 6) Domain 7) Cardinality 8) Degree 9) Weak and Strong entity
26. A University database contains information about teachers and courses. Teachers teach courses, each of the following situations concerns the teachers' relationship set. For each situation Draw an ER diagram that describes it.
    1) Every teacher must teach some course.
    2) Teacher can teach the same course in several semesters, and each offers must be recorded.
    3) Every Professor must teach some course.
    4) Explain about weak entries, class hierarch and aggregation.
27. What are super types and sub types? Explain them in detail.
28. Explain specialization hierarchy and inheritance.
29. Explain when to use primary keys, composite primary keys and surrogateprimary keys.
30. Explain attribute inheritance with example.
31. Explain different DDL, DML AND DCL commands in detail with examples.
32. Explain different data types in SQL? Explain the syntax of creating a table.
33. Explain IN, NOT IN, IS NULL and IS NOT NULL operator with example in SQL?
34. Explain Unique, Check, Not Null and Key constraints in SQL with example?
35. How do you add and drop columns for a table using advanced data definition commands.
36. What are order by, group by and having clauses? Explain them with suitable examples.
37. What are aggregate functions? Explain them in detail with examples
38. Define relation scheme and a relation instance.
39. Write the syntax for the following commands:
    1) Creating a table
    2) Inserting values into it
    3) Selecting values from a table
    4) Deleting row from a table
40. Answer each of the following questions briefly:

    The questions are based on the following relational scheme

    Emp (<u>eid: integer</u>, enami: String, age: integer, salary:real

    Works (<u>eid: integer, did: integer</u>, Pet-time: integer)

    Dept (<u>did: integer</u>, dnaname : string, budget : real, managerid: integer).

    1) Write the SQL Statements required to create the above relations including appropriate versions of all primary key and foreign key constraint.
    2) Write an SQL Statement to give every employee a 15% raise.
    3) Write the conceptual Evolution strategy for select statement?

41. Explain the following operators in relational Algebra.
    1) Selection 2) Projection 3) Set operators 4) join
42. Consider the following schema
    Suppliers (Sid : integer, sham : string address: string)
    Parts (pid : integer: pname: string, color: string)
    Catalog (Sid: integer, Pid : integer, cost: real)
    Write the following queries in relational algebra, TRC, DRC
    1). Find the names of suppliers who supply some red part.
    2). Find the sids of supplers who supply some red or green part.
    3). Find the sids of supplers who supply every part.

43. What is difference between DA and DBA?
44. Explain Metadata?
45. Explain Data Dictionary?
46. Explain benefits of DBMS?
47. Explain functions and components of DBMS with suitable figure?
48. What is data independence? Explain the difference between physical and logical data independence with example.
49. What are the responsibilities of a DBA ?
50. Explain following Term with suitable example
    (1) Primary Key (2) Candidate Key (3) Super Key
51. Write down the query for the following table where primary keys areunderlined.
    Person(ss#, name, address)
    Car(license, year, model)
    Accident(date, driver, damage-amount)
    Owns(ss#, license)
    Log(license, date, driver)
    (1) find the total number of people whose cars were involved in accidents in 2009.
    (2) Find the number of accidents in which the cars belonging to "S.Sudarshan"
    (3) Add a new customer to the database.
    (4) Add a new accident recorded for the Santro belonging to "KORTH"

52. Consider the employee data. Give an expression in SQL for the following query :
    Employee(employee-name, street,city)
    Works(employee-name, company-name,salary)
    Company(company-name, city)
    Manages(employee-name, manager-name)
    (1) find the name of all employees who work for State Bank.
    (2) Find the names and cities of residence of all employees who work for State Bank.
    (3) Find all employee in the database who do not work for State Bank.

(4) Find all employee in the database who earn more than every employee of UCO Bank.

53. Draw E – R Diagram for the School Management System.
54. Draw E – R Diagram for Library Management System
55. Explain DDL,DML,DCL
56. Consider following schema and write SQL for given statements. Student(Rollno, Name, Age,Sex,City) Student_marks(Rollno,Sub1,Sub2,Sub3,Total,Average) Write query to
    (i) Calculate and store total and average marks from Sub1, Sub2 & Sub3.
    (ii) Display name of students who got more than 60 marks in subject Sub1.
    (iii) Display name of students with their total and average marks.
    (iv) display name of students who got equal marks in subject Sub2
57. Explain database system architecture with diagram in detail.
58. List the benefits of database approach.
59. What is constraint in database? Explain types of constraints with suitable example.
60. Draw symbols for following in E-R diagram:
61. Weak Entity set, Derived attribute
62. List relational algebra operators and explain any two with example.
63. List the major functions performed by DBA.
64. Draw E-R diagram for supplier who supplies different parts. The parts are used in different projects. Explain the mapping cardinality used. Assume suitable attributes.
65. Explain generalization and specialization in ER diagram with suitable example.
66. Explain the purpose of the database system.
67. Explain different database users.
68. Explain three level architecture of database system
69. Explain candidate key, primary key and foreign key
70. Explain following relational algebra operation
71. Selection and projection operation
72. Explain specialization and generalization feature of ER diagram with example.
73. Construct E-R diagram for a hospital with a set of patients and medical doctors. Associate with each patient a log of various tests and examinations conducted.
74. Explain aggregation operation of ER diagram.
75. Construct E-R diagram of the bank. It provides different kinds of bank accounts. And loans. It operates number of branches.

76. we have following relations:

Supplier(S#,sname,status,city) **Parts**(P#,pname,color,weight,city)
SP(S#,P#,quantity) Answer the following queries in SQL.

(i) Find name of supplier for city = 'Delhi'.
(ii) Find suppliers whose name start with 'AB'
(iii) Find all suppliers whose status is 10, 20 or 30.
(iv) Find total number of city of all suppliers.
(v) Find s# of supplier who supplies 'red' part.
(vi) Count number of supplier who supplies 'red' part.
(vii) Sort the supplier table by sname.

And From The Same Do The Followings

(i) Delete records in supplier table whose status is 40.
(ii) Add one field in supplier table.
(iii) Explain commit command

And From The Same Do The Followings

(i) Find name of parts whose color is 'red'
(ii) Find parts name whose weight less than 10 kg.
(iii) Find all parts whose weight from 10 to 20 kg.
(iv)Find average weight of all parts.
(v) Find S# of supplier who supply part 'p2'
(vi) Find name of supplier who supply maximum parts.
(vii) Sort the parts table by pname.

And From The Same Do The Followings

(i) Delete records in parts table whose color is 'blue'. **01**
(ii) Drop one field in parts table. **01**
(iii) Explain rollback command. **02**

77. What is data independence? Explain different types of data independence with suitable example.
78. Solve following queries with following table, where underlined attribute is primary key.

Person(ss#, name, address), **Car**(license, year, model)
Accident(date, driver, damage-amount), **Owns**(ss#, license)
Log(license, date, driver)

1. Find the name of a person whose license number is '12345'.
2. Display name of driver with number of accidents done by that driver.
3. Add a new accident by 'Ravi' for 'BMW' car on 01/01/2013 for damage Amount of 1.5 lakh rupees.

79. Explain following terms with suitable example.
(1) Primary Key (2) Candidate Key (3) Foreign Key
80. Construct E-R diagram for a hospital with a set of patients and medical doctors. Associate with each patient a log of various tests suggested by doctors and Examinations conducted. Use Specialization and Generalization in your

Diagram.

81. Construct E-R diagram for a bank which has many branches and it supports Different types of accounts. It also provides loans to customers. Use Specialization and Generalization in your diagram
82. For Supplier – Parts database

    Supplier(S#,sname,status,city) Parts(P#,pname,color,weight,city)

    SP(S#,P#,quantity) Answer the following queries in SQL.

    1. Display the name of supplier who lives in 'Ahmedabad'.
    2. Display the part name which is not supplied yet.
    3. Count how many times supplier 'S1' has supplied part 'P1'.
    4. Find all suppliers whose status is either 20 or 30.
83. For Supplier – Parts database

    Supplier(S#,sname,status,city) Parts(P#,pname,color,weight,city)

    SP(S#,P# ,quantity) Answer the following queries in SQL.

    1. Find the name of part having 'Red' colour.
    2. Delete parts whose weight is more than 100 gram.
    3. Count how many times each supplier has supplied part 'P2'.
    4. How much time shipment is for more than 100 quantities?
84. Consider following schema and write SQL for given statements.
    - student(rollno, name, branch)
    - exam(rollno, subject_code, obtained_marks , paper_code)
    - papers(paper_code, paper_satter_name, university)

    (i) Display name of student who got first class in subject '130703'.

    (ii) Display name of all student with their total mark.

    (iii) Display list number of student in each university.

    (iv) Display list of student who has not given any exam.
85. Draw E-R diagram for Hospital management system and covert into set of table schema.
86. Describe various disadvantages of file system compare to Data base management system.
87. With example explain various mapping cardinalities and total participation.
88. Consider following schema and represent given statements in relation algebra form.

    * Branch(branch_name,branch_city)
    * Account(branch_name, acc_no, balance)
    *Depositor(Customer_name, acc_no)

    (i) Find out list of customer who have account at 'abc' branch.

    (ii) Find out all customer who have account in 'Ahmedabad' city and balance is greater than 10,000.

    (iii) find out list of all branch name with their maximum balance.
89. Differentiate the following: DA and DBA
90. Explain three level architecture of database system
91. What is Relational Algebra? Define Relational Algebra Operation Cross product with example.

92. What does ER model mean? Specify all its notations. 02
93. Construct an E-R Diagram for an insurance company with a set of customers, each of whom owns number of cars, also each can have number of recorded accident associated with it.
94. Explain Mapping Cardinalities.
95. Obtain E-R diagram for the Admission procedure in a university. An advertisement is issued giving essential qualifications for the course, the last date for recipient of application, and the fee to be enclosed with the application. A clerk in the registrar's office checks the received applications to see if mark sheet and the fee are enclosed and sends valid application to the concerned academic department. The department checks the application in detail and decides the applicant to be admitted, those to be put in the waiting list, and those to be rejected. Appropriate letters are sent to the registrar's office which intimates the applicant.
96. What is NULL? Explain
97. we have following relations:

    EMP(empno, ename, jobtitle, managerno, hiredate, sal, comm, deptno)

    DEPT(deptno, dname, loc) Answer the following queries in SQL.

    i) Find the Employees working in the department 10, 20, 30 only.

    ii) Find Employees whose names start with letter A or letter a.

    iii) Find Employees along with their department name.

    iv) Find Employees whose manager is KING.

    v) Find the Employees who are working in Smith's department

    vi) Find the Employees who get salary more than Allen's salary.

    vii)Display employees who are getting maximum salary in each department

98. Explain the purpose and application of DBMS.
99. Give Symbol used in E-R Diagram and Draw the E-R diagram of University exam System.
100. Give Symbol used in E-R Diagram and Draw the E-R diagram of Library Management System.
101. Explain generalization feature of E-R Diagram.
102. Explain selection and projection operation with example.
103. Explain commit and rollback command.
104. Explain aggregation operation of E-R Diagram.
105. Implement following relation using SQL query.
Student(stud_no,stud_name,sub1,sub2,totalmark,percentage)
    a. Create the table, add 5 records and display the data
    b. Calculate total mark and percentage and also arrange the students onascending order of total mark and also make a view of it.
    c. Update the mark of sub1 of student_no=111 with 50 and also
    d. Calculate totalmark and percentage accordingly.
106. Implement following relation using SQL query.
Employee(emp_no,emp_name,department,city,salary)
(1) Find all the employee whose emp_no is lessthan 100 and salary more than 25000 and department is "Account"

(2) count the no of employee and Sum the salary of all employee

(3) Delete the employee having minimum salary.

107. Consider following schema and write SQL for given statements. Student(RollNo, Name, Age, Sex, City)

Student_marks(RollNo, Sub1, Sub2,Sub3,Total,Average)

Write query to

(i) Display name and city of students whose total marks are greater than 225.

(ii) Display name of students who got more than 60 marks in each subject.

(iii) Display name of city from where more than 10 students come from.

(iv) Display a unique pair of male and female students.

108. Explain database system 3 tier architecture with clear diagram in detail. 06

109. Explain any two aggregate functions of SQL.

110. What is constraint in database? Explain types of constraint with suitable example.

111. Draw symbols for following in ER diagram Relationship Set, and Primary key attribute

112. Explain specialization and generalization concepts in ER diagram with suitable example.

113. Define: (1) Data (2) Entity (3) Meta Data (4) Super key (5) Not Null (6) Data Integrity (7) Dual

114. Define E-R Diagram. Draw E-R diagram with Customer, Loan and Payment sets.

115. Write query for the following:

(1) To create a table from a table.

(2) To eliminate duplicate rows.

(3) To add a new column in the table

(4) To sort data in a table