Printed Pages : 3 Roll No. ..... July 2015

(ii) Questions : 7 Sub. Code : 6 8 2 6

Exam. Code : 9 2 0

B.Engg. (Computer Science and Engg.) 8th Semester

1045

ADVANCED DATABASE SYSTEMS

Paper – CSE– 811

Time Allowed : Three Hours] **[Maximum Marks : 50**

Note:– Students are required to attempt 5 questions in all. **First** question is compulsory covering whole syllabus (10 questions carrying **1** mark each). Students will attempt **two** questions from each Part (Part A and Part B).

1. (a) What is difference between DDL and DML ?

(b) Briefly explain the need of Database Normalization.

(c) What is Query Optimization ?

(d) What is Super Key ?

(e) What is concurrency control ?

(f) Define data fragmentation.

(g) What is OLAP ?

(h) Briefly discuss the basic difference between Data Marts and Data Warehouse.

(i) What is Shadow Paging ?

(j) Briefly give the main types of database failures. 10×1=10

b) Write short note on Color transforms.

Part-B

Q5 a) What is variable length coding? Can variable-length cod

PART–A

2. Consider the following employee database :

employee (employee_name, street, city)

works (employee_name, company_name, salary)

company (company_name, city)

manages (employee_name, manager_name)

Write following SQL queries for the above given database :

(1) Find all the employees in the database who live in same cities and in same streets as do their managers.

(2) Find all employees in the database who earn more than every employee of Small Bank Corporation.

(3) Find all the employees who earn more than average salary of all employees of their company.

(4) Assume that the companies may be located in several cities. Find all companies located in every city in which Small Bank Corporation is located.

(5) Give all managers of First Bank Corporation a 10% raise unless the salary becomes greater than $100,000 ; in such cases, give only a 3% raise. 5×2=10

3. (a) Explain why 4NF is a normal form more desirable than is BCNF. 5

(b) Show that if a relation schema is in BCNF then it is also in 3NF. 5

4. (a) How does strict timestamp ordering differ from basic timestamp ordering ? 5

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(b) What is Multiple Granularity Locking ? Under what circumstances it is used ? 5

PART–B

5. What considerations play a major role in the design of a data warehouse ? Discuss the open issues in data warehousing. 5+5=10

6. (a) Explain any three techniques of database recovery in detail. 5

(b) How Query processing in distributed databases is different from normal databases ? 5

7. Write short notes on the following :

(a) Introduction to DB2 Universal Database. 5

(b) Main features of Oracle and SQL serves. 5

300

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(i) Printed Pages : 3 Roll No. .....

(ii) Questions : 8 Sub. Code : 6826

Exam. Code : 920

B.Engg. B.E. (MBA) 8th Semester (Computer Science and Engg.)

1044

ADVANCED DATABASE SYSTEMS

Paper : CSE–811

Time Allowed : Three Hours] [Maximum Marks : 50

Note :– Candidates are required to attempt **five** questions, selecting at least **two** from each Part.

PART–A

I. Consider a database, containing following tables :

Supplier information table S{S#, Sname, Status, SCity} primary key {S#}

Parts information table P{P#, Pname, Color, weight, PCity}

Primary Key {P#}

Shipment information table SP {S#, P#, Qty} Primary Key {S#, P#}

Foreign Key {S#} References S

Foreign Key {P#} References P

Functional dependencies FD's for this database are :

S# .....>Sname/Status/SCity

P# .....>Pname/Color/weight/PCity

S#, P#.....>Qty

Suggest appropriate Normal form that this database is presently having. Also modify the schema of database to convert it into higher normal forms. 10

b) Write short note on Color transforms.

Part-B

Q5 a) What is variable length coding? Can variable-length coding

II. Consider the following schema of a database :

loan(Loan_no, Loan_amount)

customer(Cust_name, Cust_street, Cust_city)

account(Acct_no, Branch_name, balance)

branch(Branch_name, Branch_city, assets)

borrower(Cust_name, Loan_no)

depositor(Cust_name, Acct_no)

(a) Using SQL, find all the customers who have a loan fr bank. Find their names and loan numbers.

(b) Using SQL, find names of all branches that have asse greater than at least one branch located in Delhi.

(c) Using SQL, find the number of deposits for each branch o bank. Note that the depositor counts only once regardless of the number of accounts depositor may have.

(d) Using SQL, find the name of all customers whose street address includes the substring 'Main'.

(e) Using SQL, write two update statements respectively, for accounts with balances over Rs. 10,000/- receives 6 percent interest, whereas others receive 5 percent interest.

2×5=

III. Explain different Concurrency control techniques in DBMS. 10

IV. Explain differences in Object Oriented and Object Relational Databases in detail. 10

PART–B

VI. Explain Replication and Allocation techniques for Distributed Database design in detail. 10

VI. Explain different Database Recovery techniques in detail. 10

VII. (a) Briefly discuss different techniques of Data Mining. 5

(b) Explain differences between OLAP and OLTP. 5

VIII. Write short notes on the following :

(a) Introduction to DB2 Universal Database 5

(b) Features of MySQL. 5

300

Part-B

Q5 a) What is variable length coding? Can variable
image whose histogram is equalized? Assu
Whether such images contain spatial or temp

b) Discuss JPEG as DCT-based image compres

Name the three types of discontinuities pr
edge detection. Give different t

Exam.Code:0919
Sub. Code: **6803**

1127

B.E. (Computer Science and Engineering)
Seventh Semester
CS-702: Advance Database Systems

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Section.

x-x-x

Q-1 Answer the following in brief:

a) ORDBMS Vs OODB paradigm
b) 3NF Vs BCNF
c) Deferred update Vs Immediate Update
d) OLAP Vs PLTP
e) Microsoft SQL server Vs MySql (2x5)

SECTION-A

Q-2 a) Explain the steps of processing a high level query. How the query execution plans are derived?

b) Explain data fragmentation in DDBMS and its three types (5x2)

Q-3 a) Explain the terms: Granularity, Dirty read and Multiversion, two phase locking using certify locks.

b) What is data replication? Why is data replication useful in DDBMS? What are the advantages and disadvantages? (5x2)

Q-4 a) Explain and discuss the architecture of datawarehouse. Explain each term in detail.

b) Give a comparison of application development, recovery and performance features of Oracle, DB2 and MySQL. (5x2)

SECTION-B

Q-5 a) What is the difference between persistent and transient objects? How persistence is handled in typical OO database systems?

b) What are the problems encountered in DDBMA while considering concurrency control and recovery? (5x2)

Q-6 a) What is meant by cost-based query optimization? (4)

b) Why is the domain-key normal form (DKNF) is known as the ultimate normal form? (3)

c) What types of information is obtained as a result of mining? (3)

Q-7 a) Describe the steps of building a warehouse. Discuss the difficulties encountered in implementing a data warehouse. (7)

b) What are the operations that need to be noted (logged) by the recovery system? (3)

x-x-x

Exam. Code: 0919
Sub. Code: 6803

1128

B.E. (Computer Science and Engineering)
Seventh Semester
CS-702: Advanced Database Systems

Time allowed: 3 Hours **Max. Marks: 50**

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following in brief:-

a) Difference between BFIM and AFIM and their role in recovery techniques.

b) Difference between OLTP and datawarehouse. Explain with an example.

c) Immediate update and deferred update recovery techniques.

d) Difference between OLAP and OLTP

e) Difference between SQL and SQL3 (5x2)

UNIT – I

II. a) Explain the steps of processing a high level query. How the query execution plans are derived?

b) Discuss the functions of ODL and OQL in object oriented databases. (2x5)

III. a) Outline the main differences between the following data models:-

i) Document Oriented
ii) Relational

b) Explain, with aid of examples, the difference between serial and serialisable schedules of transactions. Comment on whether (and if so, how) one is a superset of the other. (2x5)

IV. Consider the following tables:-
Film (filmNbr, title, year)
Director (directID, name)
Directing (directID, filmNbr)

And the following query:
SELECT Film.title FROM Film, Director, Directing WHERE Film.filmNbr = Directing.filmNbr AND Director. directID = Directing.directID AND Director.name = 'Lucas' AND Film.year = 2015;

Draw a query tree that corresponds to the most efficient way of processing this query (10)

P.T.O.

UNIT – II

V. a) Draw and explain the 3-tier Client-Server architecture of DDBMS.

b) Explain and discuss the architecture of datawarehouse. Explain each term in detail. (2x5)

VI. a) Give a comparison of application development, recovery and performance features of Oracle, DB2 and MySQL.

b) How are recursive queries specified in SQL? Explain. (2x5)

VII. a) Describe about identity, object structure, and type constructors in Object Oriented databases.

b) How is concurrency managed in distributed database management system? (2x5)

x-x-x