MCA DEGREE III SEMESTER EXAMINATION DECEMBER 2014

CAS 2302 DATABASE MANAGEMENT SYSTESMS
(Regular and Supplementary)

Time: 3 Hours   Maximum Marks: 50

PART A
(Answer *ALL* questions)

(15 x 2 = 30)

I.   (a)   What is data independence?
      (b)   What are partial keys?
      (c)   What are data models?

II.   (a)   What is meant by 'safe expansions' in relational calendar?
      (b)   What is active database?
      (c)   What is embedded SQL?

III. (a)   What do you mean by 'closure' of a set of functional dependencies?
      (b)   Does the relational model provide physical and logical data independence? Justify
            your answer.
      (c)   What do you mean by soundness and completeness of Armstrong's inference rules?

IV.   (a)   What do you mean by a 'conflict – serialiazable schedule?
      (b)   What are ACID properties of a transaction?
      (c)   What is time stamp ordering?

V.   (a)   Compare XML with other data representation methods.
      (b)   What is distributed database?
      (c)   What is object oriented database?

PART B

(5 x 4 = 20)

VI.   Explain the advantages of DBMS approach over traditional file processing.
                                          OR
VII. Explain 3-scheme architecture of database systems.

VIII. Consider the following LIBRARY relational scheme which is used to keep track
      of books, borrowers and book loans.
      BOOK (Bookid, Title, Publisher name)
      BOOK AUTHORS (Boukid, Author name)
      PUBLISHER (NAME, Adress, Phone)
      BOOK COPIES (Bookid, Branchid, Number of Copies)
      BOOK, LOANS Bookid, Branchid, Card No. Date out, Due Date)
      LIBRARY- BRANCH (Branchid, Branch Name, Address)
      Borrower (Card No., Name, Address, Phone)
      for the following Query on the library database write expressions in (i) Relational
      algebra "For each Book that is loaned out from the Calicut branch whose due
      date is today, retrieve book title, borrowers name and borrowers address.
                                          OR

(P.T.O.)

IX.   Consider the following scheme.
SUPPLIERS (Sid, Sname, address)
PART (Pid, Pname, Colour)
CATALOG (Sid, pid, cost)
CATALOG relation lirts the price charged for parts by suppliers. Write the following query in SQL.
(i) Find the sid of suppliers who supply some red part and some green part.
(ii) Find sid of suppliers who supply every part

X.   A database is to contain information concerning sales representatives, sales areas, and products. Each representative is responsible for sales in one or more areas and each area has one or more responsible representatives. Similarly each representative is responsible for sales of one or more product and each product has one or more responsible representatives. Every product is sold in every area, however two representative sell the same product in the same area. Every representative sells the same set of products in every area for which that representative is responsible. Draw an ER-diagram for this database. Show structural constraints also.

OR

XI.   Consider following relation scheme CAR-SALE (CAR, Date-sold, salesman# Commission %, Discount AMT). Assume that a CAR may be sold by multiple salesman and hence S (CAR#, SALESMAN #) is the primary key.

Additional dependencies
Date – sold $\rightarrow$ discount – Amount
Sales man $\rightarrow$ commission %
Based on the given primary key is the relation in 1NF, 2 NF, or 3 NF why or why not then would you successively normalize it completely.

XII.   Which of the following schedule is conflict, serialiazable. For each serialiazable schedule, determine the equivalent serial schedule.
(i) $r_1(x),\ r_3(x);\ w_1(x);\ v_2(x);\ w_3(x);$
(ii) $v_3(x);\ v_2(x);\ r_1(x);\ w_3(x);\ w_1(x);$

OR

XIII.   Consider following 3 transactions T_1, T_2, & T_3 and draw the precedence graph for schedule S_1.
$T_1:\ r_1(x);\ r(z);w_1(x)$
$T_2:\ r_2(z);r_2(y);w_2(z);w_2(y)$
$T_3:\ v_3(x);\ v_3(y);\ w_3(y)$
$S_1:\ v_1(x),\ r_2(z),\ v_1(z),\ r_3(x),\ v_3(y),\ w_1(x)$
        $w_3(y),\ r_2(y),\ w_2(z),\ w_2(y)$
state whether it is serialiazable or not.

XIV.   What are different types of knowledge discovered during data mining?

OR

XV.   Advantages of distributed database.

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