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B.Tech. (Sem. – 5th)

DATA BASE MANAGEMENT SYSTEM

SUBJECT CODE : CS - 305

Paper ID : [A0466]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours **Maximum Marks : 60**

Instruction to Candidates:

1) Section - A is **Compulsory**.
2) Attempt any **Four** questions from Section - B.
3) Attempt any **Two** questions from Section - C.

Section - A

Q1) ***(10 × 2 = 20)***

a) What are the different structural constraints?
b) Define different types of database management systems.
c) What is the importance of data catalog in DBMS?
d) What is the difference between Artificial key and candidate key?
e) Write the applications of Domain as well as in tuple calculus. Give at least one example for each.
f) Write SQL statement to view the records of table in descending order? Give example.
g) How view is created in SQL. Write its application.
h) Discuss the different transaction states?
i) What is the objective of serializability?
j) What is shadow paging?

Section - B

(4 × 5 = 20)

Q2) Consider the following database schema for supplier-parts- projects database (suppliers(Sno) supply parts (Pno) to projects (Jno)):

Supplier(Sno, Sname, date_of_Birth, birth_place)
Parts (Pno, Pname, color, weight)
Project (Jno, Jname, city)
Shipment (Sno, Pno, Jno, qty)

Draw the E-R model. Also specify: the different entities, cardinalities and degrees of the relationships in the above model. Discuss about different symbols used E-R model.

Q3) Consider the database schema given in QII, write queries in SQL to:

(a) Create above tables with underlined attributes as primary key in the respective table.
(b) Add a new constraint on Shipment table: qty should be in the range of 5 to 200.
(c) Add a new attribute Sno in Parts table.

(d) Add a tuple in Supplier table, and to display the records of Supplier table.

(e) Create the relationship between the Supplier and Shipment tables.

Q4) Consider the following Patient_doctor relation, which keeps records of appointment details between patients and doctor.

Patient_doctor (Patient-name, PdateOfBirth, Doctor Name, Dcontact_no, Daddress, Visit - DateTime, duration_minutes)

Normalize the above relation upto 3NF. Also, explain the delete and update anomalies of 1NF, 2NF and 3NF.

[Assumptions: Doctor cannot have two appointments simultaneously and a patient cannot have same time with two doctors. There are two candidate keys in the relation; Doctor-name+vist-DateTime and Patient-name+visit-DateTime].

Q5) What is the usefulness of different desirable properties of transactions, Discuss?

Q6) Explain, Multiple Granularity locking technique with suitable example?

Section - C

(2 × 10 = 20)

Q7) (a) Discuss about the advantages and disadvantages of DBMS?

(b) Consider the database schema given in QII, write queries in relational algebra as well as in relational calculus to:

(i) retrieve the details of each part.

(ii) retrieve the supplier numbers supplying qty<=200.

(iii) retrieve the details of the parts, which are supplied by supplier, Sno=5.

Q8) Write short note on:

(a) Multivalue dependency.

(b) Discretionary access control.

(c) Time stamp ordering.

Q9) Explain Deffered database modification and immediate database modification recovery techniques.