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CSE201

Enrol. No. A2305219202

[ET]

END SEMESTER EXAMINATION : NOV-DEC, 2021

DATABASE MANAGEMENT SYSTEMS

Time : 3 Hrs.

Maximum Marks : 60

Note: Attempt questions from all sections as directed.

SECTION - A (24 Marks)

Attempt any four questions out of five.

Each question carries 06 marks.

1. Explain Database architecture with labeled Diagram.
2. What is role of keys in DBMS. Explain all keys with Suitable example.
3. Draw a E-R diagram for a banking enterprise.
4. Write short notes on tuple relational calculus.
5. What are the various forms of data transparency?

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SECTION - B (20 Marks)*Attempt any two questions out of three.**Each question carries 10 marks.*

6. Give an example of a relation schema R and a set of dependencies such that R is in BCNF, but is not in 4NF.
7. During its execution, a transaction passes through several states, until it finally commits or aborts. List all possible sequences of states through which a transaction may pass. Explain why each state transition may occur.
8. Describe how to incrementally maintain the results of the following operations, on both insertions and deletions.
- (a) Union and set difference
 - (b) Left outer join

SECTION - C (16 Marks)*(Compulsory)*

9. (a) Consider the database schema

$\text{Emp} = (\text{ename}, \text{setof}(\text{Children}), \text{setof}(\text{Skills}))$

Children = (name, Birthday)

Birthday = (day, month, year)

Skills = (type, setof(Exams))

Exams = (year, city)

Assume that attributes of type setof(Children), setof(Skills), and setof(Exams), have attribute names ChildrenSet, SkillsSet, and ExamsSet, respectively. Suppose that the database contains a relation emp (Emp). Write the following queries in SQL.

(i) Find the names of all employees who have a child who has a birthday in March.

(ii) Find those employees who took an examination for the skill type "typing" in the city "Dayton".

(iii) List all skill types in the relation emp. (8)

(b) Suppose that you have been hired as a consultant to choose a database system for your client's application. For each of the following applications, state what type of database system (relational, persistent-programming-language-based OODB,

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object relational; do not specify a commercial product) you would recommend. Justify your recommendation.

- (i) A computer-aided design system for a manufacturer of airplanes.
- (ii) A system to track contributions made to candidates for public office.
- (iii) An information system to support the making of movies.

(8)