10CS54

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Database Management Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast TWO questions from each part.*

PART – A

1   a.   Define the following terms with example :
         i) Database   ii) DBMS   iii) Attribute   iv) Entity   v) Metadata.   **(05 Marks)**
    b.   List and explain advantages of using DBMS approach.   **(10 Marks)**
    c.   With neat diagram explain "three schema architecture".   **(05 Marks)**

2   a.   With simplified diagram, illustrate the main phases of database design. **(07 Marks)**
    b.   Design ER diagram for the company database with structural constraints. Assume the entities, attributes and relationships.   **(08 Marks)**
    c.   Explain different types of attributes in ER model with example.   **(05 Marks)**

3   a.   Discuss the entity integrity and referential integrity constraints with example.   **(07 Marks)**
    b.   Discuss the various types of JOIN operations.   **(07 Marks)**
    c.   Consider the following schema and write relational algebra expressions.
         Sailors (Sid, Sname, rating, age)
         Boats(bid, bname, color)
         Reserves (Sid, bid, day)
         i)   Find the names of sailors who have reserved boat 103
         ii)   Find the names of sailors who have reserved a red boat
         iii) Find the colors of boats reserved by Lubber.   **(06 Marks)**

4   a.   What are the basic datatypes available for attributes in SQL?   **(05 Marks)**
    b.   Explain referential triggered actions give an example of how to use a trigger to emulate referential actions.   **(05 Marks)**
    c.   Consider the following schema and write the SQL queries.
         STUDENT(Snum, Sname, Major, level age)
         FACULTY(fid, fname, dept, salary)
         COURSE(Cname, time, Room, fid)
         ENROLL(Snum, cname)
         i)   Find the names of student who are enrolled in class taught by Prof. Harshith
         ii)   Find the names of student studying under faculty of mechanical dept.
         iii) Retrieve the faculty name whose salary greater than the average salary of all faculties
         iv)   Find the name of all class that meet in R128 or five or more students enrolled.
                                                                                 (10 Marks)

PART – B

5   a.   How a views is created and dropped explain with example.   **(06 Marks)**
    b.   Explain the syntax of UPDATE statement in SQL.   **(04 Marks)**
    c.   Describe the concept of embedded SQL with program segment that uses cursor for update operation.   **(10 Marks)**

6 a. Explain the informal design guidelines for relational schema in detail. **(10 Marks)**

b. Define 1NF, 2NF, 3NF with suitable example for each. **(10 Marks)**

7 a. Define multivalued dependency. Explain 4NF with an example. **(10 Marks)**

b. Explain :
   i) Inclusion dependences
   ii) Domain key normal form. **(10 Marks)**

8 a. What are ACID properties? Explain. **(08 Marks)**

b. Explain 2 phase locking protocol. **(06 Marks)**

c. Explain time stamp ordering algorithm. **(06 Marks)**

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