DOE
04-02-16.

Mid-Semester Examination

School of Computer Engineering

KIIT University, Bhubaneswar-24

Time: 2hrs ***Full Mark: 25***

Answer any FIVE questions, including Question No. 1 which is compulsory.

1. [1 x 5]
   a. For any set operations, union compatibility is an essential criteria – justify your answer.
   b. Draw an ERD to represent a recursive relationship. Also, design the schema for the same.
   c. How naïve user is different from DBA.
   d. Let R (A, B) and S (B, C) be two tables, where attribute B of R is a foreign key reference to attribute B of S. Then, the following statement is always hold good or not?
   $$\pi_B(R) = \pi_B(S)$$
   e. Represent R ∩ S using primary set operators.
2. a. Draw the ER diagram for a Hospital management system. The database maintains all the details of the doctor (unique drno, name, designation, expertise) who enrolled to department and also all staffs (unique sid, ename, salary, contact (s)) information who works for the department. Department of the hospital identified through the unique deptno and department name. There is a registration process required for all patient to a department before they treated by any doctor. Patient details information must contain their unique pid, name, address (street, city, pin) and age. Staffs are managing the patients according to the scheduled time. Make necessary assumptions. [3]
   b. Convert the above ER diagram into relational schema. [2]
3. Discuss the significant pros and cons of Hierarchical, Network and Relational data model with suitable diagrams. [5]
4. Consider the following relational schema

   Employee (empno, name, office, age)

   Books (isbn, title, authors, publisher)

   Borrow (empno, isbn, date)

   Create the tables for the above schema using SQL statements with respective primary and foreign keys. [1]

   Solve the following queries by using *relational algebra* and *SQL*. [2+2]

   i. List the employee details working in "Bhubaneswar" office.
   ii. Find the employee number who have borrowed a book published by TMH and by PHI.

5. a. Data independence is an important consideration for any database management system – justify your answer. [2]

   b. Distinguish between 3-level of data abstraction in database management system with suitable example. [3]

6. Write short notes (any two) [2.5 +2.5]
   a. Aggregation
   b. Data Integrity constraints
   c. DBMS approach vs. File Management approach
   d. Generalization vs. Specialization

~~~~~~~~All the Best ~~~~~~~~
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