2018

CSIT

CSIT : 1.4

ADVANCED DATABASE MANAGEMENT SYSTEM

Full Mark: 80

Time: 3 hours

The figures in the margin indicates full marks for the questions

1. Answer the following questions: 1×10=10
   i. What is a relation state?
   ii. Which normal form depends on the property of transitivity?
   iii. What is cardinality ratio?
   iv. Define Division operation.
   v. What is an entity type?
   vi. What is before image (BFIM)
   vii. What is after image (AFIM)
   viii. What is dirty bit?
   ix. What is DML?
   x. What do you mean by Key?

EMPLOYEE (Fname, Mname, Lname, Ssn, Bdate, Address, Sex, Salary, Super_Ssn, Dno)
DEPARTMENT(Dname, Dnumber, Mgr_Ssn, Mgr_Start_Date)
PROJECT(Pname, Pnumber, Plocation, Dnum)

Fig. 1

Answer any six questions from question no. 2 to 11

2. a. Using the relation schemas in Fig. 5, find the names of employees who work on all projects controlled by the department number 5 (Use Relational Algebra). 4

b. Write an SQL for the following using the relation schema in Fig. 1:
   i. Retrieve all employees in department 5 whose salary is between Rs. 30,000 and Rs. 40,000. 3
   ii. Retrieve the name of each employee who works on all the projects controlled by department number 5. 3

3. Write down the desired properties of transaction. 10
4. What are the advantages of using the DBMS approach? Explain. 10
5. Write an algorithm for finding a minimal cover F for a set E of functional dependencies. A set of FDs for the relation R{A,B,C,D,E,F} is AB-C, C-A, BC-D,ACD-B, BE-C, EC-FA, CF-BD, D-E. Find a minimal cover for this set of FDs. 10
6. Given a relation R={A,B,C,D,E,H} and having the following FDs F={A-BC, CD-E, E-C, D-AEH, ABH-BD , DH-BC}, find the key for the relation R with FD F. 10
7. Write a few differences with example among 10
   a. Composite versus simple attribute.
   b. Single-valued versus multi-valued.
8. Write an algorithm for testing conflict serializability of a schedule S. 10
9. Describe the three-schema architecture with proper diagram.
10. Mention the variation of JOIN and define them. Retrieve the name of the manager of each department using natural join for the following relation schema: 10
11. Explain informal design guidelines for relational schemas. 10
12. Write short notes on (any two) 3×2=10
    a) Entity Integrity
    b) Foreign Key
    c) Candidate Key and Primary Key
    d) BCNF

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