04591

Semester III (B.Tech)

Er. No....................
Academic Year: 2021-22

Jaypee University of Engineering & Technology, Guna
T-3 (Odd Semester 2021)
18B11CI312 – DATABASE SYSTEMS

Maximum Duration: 2 Hours

Maximum Marks: 35

Notes:
1. This question paper has five questions.
2. Write relevant answers only.Write queries syntax preferably in MYSQL.
3. Do not write anything on a question paper (Except your Er. No.).

Marks

Q1. Consider COMPANY relational database schema (given in figure 1) with primary key and foreign key constraints. Write SQL queries that:
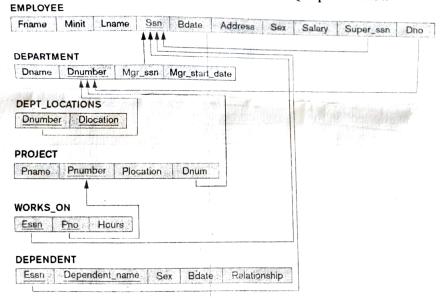

Figure 1: COMPANY relational database schema

(a)
i. Displays the number of departments in a company.   [04]
ii. Displays department number and department wise maximum salary if maximum salary is greater than 40000.
iii. Display manager's ssn and number of employees working under every manager.
iv. Display number of employees whose fname starts with "J".

(b) Solve following questions using Join Queries and SQL syntax: [06]

    i.   Display project name with its controlling department name.

    ii.   Display manager's names for every employee.

    iii. Display all managers' fname where the employee's fname starts with "J".

    iv. Assume p number of tuples in table A and q number of tuples in table B with c common tuples. If we perform a right outer join on table A (left table) and table B (right table) then how many tuples will there be in an output? How many tuples will there be in a full outer join?

Q2. (a) Consider relation R (A, B, C, D) with following functional dependencies: [03]
AB → C, C → D, and D → A. R is already in 3rd normal form. Is R in BCNF? If no, then normalize up to BCNF.

(b) Write SQL queries for followings: [05]

    i.   Create an EMP table with attributes SSN, Fname, Salary, Dno with suitable data types. Create a suitable primary key for the table.

    ii.   Create a HouseNumber table with attributes SSN, and Status. With the primary key as SSN.

    iii. Create a trigger on table EMP which inserts record into HouseNumber table when new record is inserted in EMP table. The trigger should be raised after insertion of the record in the EMP table. This trigger should insert SSN of the employee and Status as "Not allotted" in the HouseNumber table.

Q3.   Add the operation commit at the end of each of the transactions T1 and T2 [06]
in table 3.1, and then list all possible schedules for the modified transactions. Determine the types of conflicting operations in possible schedules of table 3.1.

Table 3.1 Transaction for flight booking system

T1	T2
read_item(X)	
X:=X-N;	
write_item(X)	
	read_item(X);

	X:=X+M;
	write_item(X);
read_item(Y);	

Q4. Discuss the final result of the different schedules of table 3.1, where M = 2 **[06]** and N = 2, with the capacity of X is 100 and Y is 80. Discuss the type of possibilities of concurrency problems.

Q5. Discuss types of queries for which renaming of attributes is necessary in **[05]** order to specify the query unambiguously.