Assignment on Joins, Sub queries

and Relational Algebra

Note:

- The deadline for assignment submission is Sunday, September 22, 2024, by 10 PM.
- Reference materials on SQL and Relational Algebra have been uploaded to the LMS for your convenience.

	Order by and Group by
1.	For the following relation, **Student(Rollno, Name, Age, Marks, BranchID, Branch)** Answer the following question, a. Show the student details order by name b. Find the maximum marks of students having rollno 101,110,115. c. Find all the total number of students in each and every branch?
	Joins
2.	Assume the necessary values related to below mentioned questions. ***Table 1***: **Student**(**Roll, Name, Age, City, Mobile, Date of Birth**) ***Table 2***: **Student_Course**(**Course Id, Roll No**) a. Find the names and age of students in different courses. b. Give the difference between Inner Join, Left Join ,Right Join, Full Join c. Apply Inner Join, Left Join ,Right Join, Full Join for the above tables.
	Sub Queries
3.	In SQL, specify the following queries on the database in Figure 3.5 using the concept of nested queries. a. Retrieve the names of all employees who work in the department that has the employee with the highest salary among all employees. b. Retrieve the names of all employees whose supervisor's supervisor has '888665555' for Ssn.

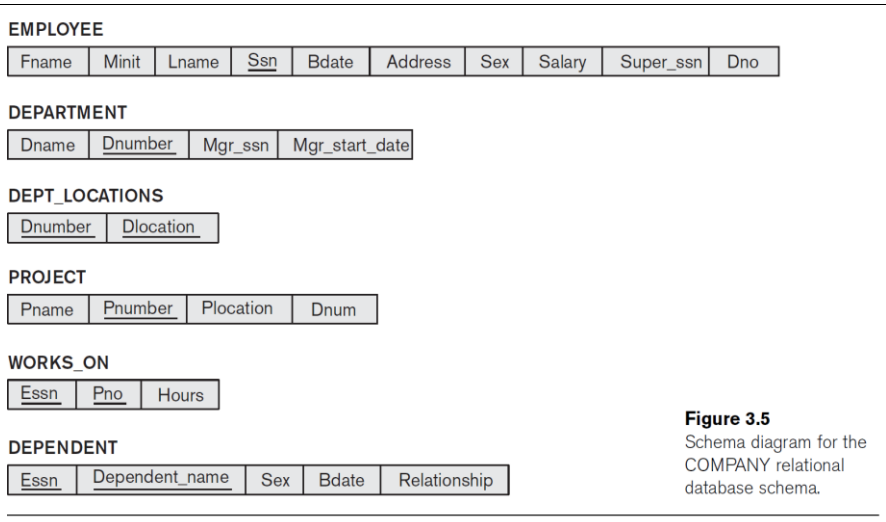

Figure 3.5
Schema diagram for the COMPANY relational database schema.

4. In SQL, specify the following queries on the database in Figure using the concept of nested queries.

Employee

Eno	Name	Age	Salary
1000	Ankit	24	30000
1001	Pooja	24	20000
1002	Komal	19	10000
1003	Surender	49	40000

Work_IN

Eno	Dno
1000	10
1001	10
1002	11
1003	10

Department

Dno	Dname	City
10	Landline	Bhiwani
11	Phone	Rohtak

a. Find names of employees who work in Department number 11

b. Find name of employee whose basic pay is Greater then all basic pay of the employees working in Department number 10

c. Find the names of employees whose basic pay is greater than the average basic pay

Relational Algebra

5. Consider the following relations for a database that keeps track of business trips of

	salespersons in a sales office: SALESPERSON(Ssn, Name, Start_year, Dept_no) TRIP(Ssn, From_city, To_city, Departure_date, Return_date, Trip_id) EXPENSE(Trip_id, Account#, Amount) A trip can be charged to one or more accounts. Specify the foreign keys for this schema, stating any assumptions you make. Specify the following queries in relational algebra on the database schema above. a. Give the details (all attributes of trip relation) for trips that exceeded $2,000 in expenses. b. Print the Ssns of salespeople who took trips to Honolulu. c. Print the total trip expenses incurred by the salesperson with SSN = '234-56-7890'.
SQL and Relational Algebra	
6.	Consider the following schema: Suppliers(sid: integer, sname: string, address: string) Parts(pid: integer, pname: string, color: string) Catalog(sid: integer, pid: integer, cost: real) The key fields are underlined, and the domain of each field is listed after the field name. Thus sid is the key for Suppliers, pid is the key for Parts, and sid and pid together form the key for Catalog. The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in **SQL and relational algebra.** a. Find the names of suppliers who supply some red part. b. Find the sids of suppliers who supply some red or green part. c. Find the sids of suppliers who supply some red part or are at 221 Packer Ave. d. Find the sids of suppliers who supply some red part and some green part. e. Find the sids of suppliers who supply every red part. f. Find the sids of suppliers who supply every red or green part. g. Find the sids of suppliers who supply every red part or supply every green part. h. Find the pairs of sids such that the supplier with the first sid charges more for some part than the supplier with the second sid. i. Find the pairs of sids such that the supplier with the first sid charges more for some part than the supplier with the second sid. j. Find the pids of parts that are supplied by at least two different suppliers.