CHAPTER 8 REVIEW

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Specify the following queries on the COMPANY relational database schema shown in Figure 5.5 using the relational operators discussed in this chapter.

1. List the names of all employees who have a dependent with the same first name as themselves. SELECT E.Fname

FROM EMPLOYEE AS E

JOIN DEPENDENT ON E.Ssn=DEPENDENT.Essn

WHERE DEPENDENT.Dependent\_name=E.Fname;

1. Retrieve the names of all employees that work on every project.

SELECT E.Fname

FROM EMPLOYEE AS E

WHERE NOT EXISTS(

SELECT P.Pnumber

FROM PROJECT P

WHERE NOT EXISTS(

SELECT \*

FROM WORKS\_ON AS W

WHERE P.Pnumber= W.Pno AND W.Essn = E.Ssn

)

);

1. Retrieve the average salary of all female employees.

SELECT AVG(E.Salary)

FROM EMPLOYEE AS E WHERE E.Sex=’F’;

1. List the last names of all department managers who have no dependents.

SELECT E.Lname

FROM EMPLOYEE AS E

JOIN DEPARTMENT ON E.Super\_ssn=DEPARTMENT.Mgr\_ssn

JOIN DEPENDENT ON DEPARTMENT.Mgr\_ssn != DEPENDENT.Essn;

1. Specify query 1C using QBE format.

EMPLOYEE

|  |  |
| --- | --- |
| Sex | Salary |
| F | P.AVG |

1. Consider the AIRLINE relational database schema shown in Figure 5.8. Specify the following queries in relational algebra:
2. List all fare information for flight number 'co197'.

σFlight\_number = ’co197’(FARE)

1. List the flight numbers and weekdays of all flights or flight legs that depart from Houston Intercontinental Airport (airport code ‘iah’) and arrive in Los Angeles International Airport (airport code ‘lax’).

π Flight\_number, Weekdays(σ Startairport = 'iah' ∧ Endairport = 'lax' (FLIGHTLEG))

1. Retrieve the number of available seats for flight number ‘co197’ on ‘2009-10-09’. πNumber\_of\_available\_seats (σFlight\_number = ’co197’ and Date = ’2009-1009’(LEG\_INSTANCE))

1. List the Customer\_name, Airplane\_type and the Airline for every customer with a reserved seat.

πCustomer\_name,Airplane\_type,Airline(σCutomer\_name

∈πCustomer\_name(σSeat\_number/ =null (SEAT\_RESERVATION⋈Flight\_number=

Flight\_number∧Leg\_number=Leg\_number ∧ Date=DateLEG\_INSTANCE⋈Airplane\_id =Airplne\_id AIRPLANE)))

1. Specify query 3C using QBE format.

LEG\_INSTANCE

|  |  |
| --- | --- |
| Flight\_number | Date |
| co197 | 2009-10-09 |

RESULT

|  |
| --- |
| Number\_of\_available\_seats |
| P. |

1. Specify the following queries in relational algebra on the database schema given in Exercise 5.14:
   1. List the Order# and Ship\_date for all orders shipped from Warehouse #W

πOrder#, Ship\_date(σWarehouse# = ’W2’(SHIPMENT))

* 1. Produce a listing Cname, No\_of\_orders, Avg\_order\_amt, where the middle column is the total number of orders by the customer and the last column is the average order amount for that customer

πCname, No\_of\_orders, Avg\_order\_amt(Cust#; count(Order#) as No\_of\_orders, avg(Ord\_amt) as Avg\_order\_amt(ORDER)⋈CUTOMER)

* 1. List the Order# for orders that were shipped from all warehouses that the company has in New York.

πOrder#(σCity = ’New York’ (WAREHOUSE)⋈SHIPMENT))

* 1. List the number of orders per warehouse.

γWarehouse#, count (Order#) as No\_of\_orders (SHIPMENT)

1. Specify query 5B using QBE format.

CUSTOMER

|  |  |  |  |
| --- | --- | --- | --- |
| Cust# | Cname | No\_of\_orders | Avg\_order\_amt |
|  | P. | P. | P. |