

Class Activity

Database Systems CS203



Convert the following into Relational Algebra

```
SELECT    Bdate, Address
FROM      EMPLOYEE
WHERE     Fname = 'John' AND Minit = 'B' AND Lname = 'Smith';
```

Convert the following into Relational Algebra

```
SELECT    Fname, Lname, Address
FROM      EMPLOYEE, DEPARTMENT
WHERE     Dname = 'Research' AND Dnumber = Dno;
```

Convert the following into Relational Algebra

```
SELECT      Pnumber, Dnum, Lname, Address, Bdate  
FROM        PROJECT, DEPARTMENT, EMPLOYEE  
WHERE       Dnum = Dnumber AND Mgr_ssn = Ssn AND  
              Plocation = 'Stafford'
```

Convert the following into Relational Algebra

```
SELECT      E.Fname, E.Lname, S.Fname, S.Lname  
FROM        EMPLOYEE AS E, EMPLOYEE AS S  
WHERE       E.Super_ssn = S.Ssn;
```

Convert the following into Relational Algebra

```
( SELECT      DISTINCT Pnumber
  FROM        PROJECT, DEPARTMENT, EMPLOYEE
  WHERE        Dnum = Dnumber AND Mgr_ssn = Ssn
               AND      Lname = 'Smith' )

UNION

( SELECT      DISTINCT Pnumber
  FROM        PROJECT, WORKS_ON, EMPLOYEE
  WHERE        Pnumber = Pno AND Essn = Ssn
               AND      Lname = 'Smith' );
```

Specify the following statements using Relational Algebra

- Retrieve the name and address of all employees who work for the 'Research' department.
- Retrieve the names of employees who have no dependents.
- For each department, retrieve the department name and the average salary of all employees working in that department.

Example

Consider the following MAILORDER relational schema describing the data for a mail order company.

PARTS(Pno, Pname, Qoh, Price, Olevel)

CUSTOMERS(Cno, Cname, Street, Zip, Phone)

EMPLOYEES(Eno, Ename, Zip, Hdate)

ZIP_CODES(Zip, City)

ORDERS(Ono, Cno, Eno, Received, Shipped)

ODETAILS(Ono, Pno, Qty)

Qoh stands for *quantity on hand*: the other attribute names are selfexplanatory. Specify and execute the following queries using the RA interpreter on the MAILORDER database schema.

- Retrieve the names of parts that cost less than \$20.00.
- Retrieve the names and cities of employees who have taken orders for parts costing more than \$50.00.
- Retrieve the pairs of customer number values of customers who live in the same ZIP Code.
- Retrieve the names of customers who have ordered parts from employees living in Wichita.
- Retrieve the names of customers who have ordered parts costing less than \$20.00.
- Retrieve the names of customers who have not placed an order.
- Retrieve the names of customers who have placed exactly two orders

