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## CSCD 327 Lab #2 (16 points)

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1. (8 points) Write the following queries in **relational algebra**, using the schema below, where the primary keys are underlined.

Sailors(sid, sname, rating, age)

Reserves(sid, bid, day)

Boats(bid, bname, color)

- a. Find names of sailors who have reserved boat 103 (i.e., bid = 103).

PROJECT sname, (SELECT bid = 103 (Sailors NJ Reserves))

- b. Find names of sailors who have reserved a red boat.

PROJECT sname (SELECT color = "red" (Boats) NJ Sailors NJ Reserves))

- c. Find names of sailors who have reserved a red or a green boat.

PROJECT sname (SELECT color = "red" or color = "green"(Sailor NJ Reserves NJ Boat))

- d. Find names of sailors who have reserved a red and a green boat.

PROJECT sname (SELECT color = "red" (Boats) NJ Sailors NJ Reserves))

UNION

PROJECT sname (SELECT color = "green" (Boats) NJ Sailors NJ Reserves))

2. (4 points) Write the following queries in **relational algebra**, using the university schema I gave you in class.

- a. Find the names of all students who have taken at least one Comp. Sci. course.

PROJECT id, name (Student NJ Takes NJ (PROJECT course\_id (SELECT dept\_name = "Comp Sci"(Course)))

- b. Find the IDs and names of all students who have not taken any course offered before 2009.

PROJECT id, name ( Student ) - PROJECT id, name ( SELECT year > 2009  
(Takes NJ Student))

3. (4 points) Write the following queries in **relational algebra**, using the schema below, where the primary keys are underlined.

employee (pname, street, city)

works (pname, cname, salary)

company (cname, city)

manages (pname, manager\_name)

- a. Find the names, street addresses, and cities of residence of all employees who work for “First Bank Corporation” and earn more than \$10,000.

PROJECT pname, street, city (SELECT cname = “First Bank Coporation” ^ salary =  
10,000 (employee NJ works))

- b. Find the names of all employees in this database who live in the same city as the company for which they work.

PROJECT employee.pname (SELECT employee.city = company.city (employee X  
company))