Databases Homework 7

Problem 1: Consider the following relational database schema:

```
Student(ID, name, dept, status)     // status = "grad" or "undergrad"
                                    // ID is a key
RA(ID, advisor, dept)               // (ID,advisor) together are a key
TA(ID, course, dept)                // (ID,course) together are a key
```

Write the following queries in relational algebra and in SQL.

(A) Find the name of all graduate students that are not an RA or a TA.
(B) Find the name of all graduate students who are an RA or a TA in a department other than their own.
(C) Find the student with the highest ID.

Problem 2: Consider the following relational database relation `Flight(departingCity, arrivingCity, airline, cost)`.

Give an SQL query to find the cheapest no-stop flight between Milwaukee and Detroit.
Give an SQL query to find the cheapest flight between Milwaukee and Detroit with one or more stops.

Notice that in real live, we would need to account for times as you might not want to stop for a few days in Omaha to connect between two very cheap flights.

Problem 3: Use the employees database (see Module 4), find the following data:

1. The names of all department managers
2. The average salary of all employees in 1986 that are department managers
3. The maximum salary of all employees (given by name and salary)
4. The average maximum salary of all employees that are department managers
5. The name of the employee and their title with the smallest salary.
6. The name of the employee and their title with the largest salary.
7. The payroll of all department in 1986