

# Homework 4 for CSC 742: Database Management

**You need to submit a hardcopy for the entire homework and electronic files for the SQL-related problems.**

## Collaborative Work

You may form teams of 1 - 4 members (of students in this class) to cooperate on this problem set. After discussing the problem, please write up your answers individually. Indicate the names of the other members in your team, if any.

### 1 Relational Algebra (20 points)

7.24 in Elmasri & Navathe.

### 2 Relational Calculus (20 points)

Redo 7.24 (a) and (b) in Elmasri & Navathe using tuple relational calculus.

### 3 SQL (40 points)

Consider 7.24 in Elmasri & Navathe. Create a table for each relation in your SyBase account, and put enough tuples for each table so that none of the queries will return an empty relation. Write SQL queries for all the questions.

You **MUST** use the exact names of the relations and the attributes as in the textbook. You have to be careful with your tables. Remember that the TA may use a different set of tables to test your queries. You will **NOT** get a test database for this problem.

Submit in a file the SQL statements for creating tables, inserting tuples, and the SQL queries. Name your file 7.24.sql. You should also include this in your hardcopy submission.

## Independent Work

You must solve this problem set individually without any assistance from anyone. Mastery of the predicate calculus, and the ability to convert from English to the predicate calculus, is essential for success in this course.

### 4 Relational Algebra (30 points)

7.25, 7.26, and 7.28 in Elmasri & Navathe. (Only foreign keys and queries are required for 7.28.)

## 5 Relational Calculus (30 points)

Redo 7.25 (a) (b), 7.26 (b) (c), and 7.28 in Elmasri & Navathe using tuple relational calculus. For 7.28 (c) (d), write TRC expressions for the algebra expressions you did in the previous question. (Only queries are required for 7.28.)

## 6 SQL (50 points)

Write SQL queries for 7.25, 7.26, and 7.28 in Elmasri & Navathe using SQL. The TA will create test databases. However, he will NOT give you the query results. It's up to you to figure out whether your queries are correct or not. Also note that he may use a different database to grade your answers.

Submit a file for each problem. Name them as 7.25.sql, 7.26.sql, and 7.28.sql, respectively. You should also include them in your hardcopy submission.