CSCE 520 – Spring 2004
Final Examination
May 5, 2004

Name:_____

There are a total of 6 questions (all with multiple parts) and 100 points on this examination. Points for each question are shown beside the question. If you think a question is ambiguous, make and state a reasonable assumption. The exam is closed book and closed notes. The use of calculators and similar-looking electronic devices is not allowed. Show your work for possible partial credit. Answer all questions on this exam paper. There is an extra sheet of paper at the end if you need more space for answers or for scratch paper.

There is also a sheet containing a short questionnaire about course objectives. Similar surveys are being done in all CSCE major courses this semester as part of our ongoing assessment efforts. Please tear off this sheet and hand it in separately from the exams by placing it in the envelope provided. Your completion of this survey will be counted as an exercise for grade computation. However, your comments will not be read until after the grades have been submitted.

1. (6) Give examples of relations that are in the following normal forms (one each) and briefly explain your answers:

a. Not in 1NF

b. In 1NF but not 2NF

c. In 2NF but not 3NF

2. (12) Briefly define each of the following terms in the context of this course.

    a. BLOB

    b. Composite key

    c. Page footer

    d. Cursor

    e. ODBC

    f. Data clustering

3. (24) Consider the attached description of a possible furniture store application.

a. Draw a class diagram to represent the information required to implement this application.

b. Show the normalized relations that would be used to hold this information.

c. Explain how pictures of the furniture and fabrics might be included in this database.

d. Write SQL statements to actually create the tables. Do not include the pictures.

4. (30) Write SQL queries for Sally's Pet Store for the following requests. A copy of the database schema is attached.

a. List all information in the animal table sorted (in alphabetical order) first by category (primary sort key) and then by breed (secondary sort key)

b. List the different categories available and the number of animals in each category.

c. Give read access to the animal table to everyone.

d. Which animals do not have a Web photo (image file)? List the AnimalID, name, and category; exclude all fish.

e. List the names of customers who have bought both animals and merchandise.

f. List the names of customers who have bought animals but not merchandise.

5. (20) Compare and contrast the following pairs:

a. OLTP vs. OLAP

b. base tables vs. views

c. forms vs. reports

d. B+ trees vs. hash files

6. (8) Give one measure that could be used to defend against each of the following potential security threats.

a. The disk drive with the database on it fails, and all its data is lost.

b. Data entry clerks keep mistyping the item codes in orders.

c. Someone on the Internet acquires a password for one of your salespeople by monitoring Internet traffic.

d. A purchasing department employee creates fake supplier accounts and redirects payments to a personal account.