THE UNIVERSITY OF ZAMBIA
DEPARTMENT OF COMPUTER STUDIES
CST 2042 INTRODUCTION TO DATABASE AND FILE SYSTEMS

SEMESTER TWO (2) EXAMINATION 2006

INSTRUCTIONS : Section 1 Answer all Questions
Section 2 Answer Any Two (2) Questions.
TIME ALLOWED : Three (3) Hours.

SECTION 1

QUESTION 1

(A). Describe the relationship between a relation, and the relation schema. [4]

(B). What is the relational database schema? [3]

(C). Discuss the properties of a relation. [3]

(D). Explain the difference between a primary key, and the foreign key? [5]

QUESTION 2
(A). Using the SQL syntax CREATE a table structure for the base relation for the Property for Rent, using the following: [4]

1. Property Number	NOT NULL;
2. Street	NOT NULL;
3. City	NOT NULL;
4. Property Type	NOT NULL DEFAULT 'F';
5. Rooms	NOT NULL DEFAULT 4;
6. Owner Number	NOT NULL;
7. Staff Number;	
8. Rent Amount	NOT NULL;
9. Property Rented (y/n)?	NOT NULL;

(B). Using the SQL syntax CREATE VIEW for the Property for Rent so that users can view available properties for rent. All columns in the Property for rent table (created above in 2 A) should be used. [4]

(C). Using the SQL syntax, give the user with the authorization identifier Manager full privileges to the Property for rent table (created above in 2 A). [4]

(D). Using the SQL syntax, revoke all privileges granted to Manager on the Properties for Rent table. [4]

(E). Using the SQL syntax, remove Properties for Rent view from the database (which you created in 2. B above). [4]

QUESTION 3

From the information provided in the Properties for Rent (see Question 2 above), write the SQL syntax simple queries, aggregate functions, sub-queries and joins to:

3.1 List full details of all properties. [2]

3.2 List all properties located in Kitwe. [2]

3.3 How many properties are they in Kitwe? [2]

3.4 What's the average rent? [2]

3.5 List the monthly rentals, the type of properties in Kitwe. [2]

3.6 List properties, which are currently un-rented. [2]

3.7 What is the average number of rooms for all properties? [2]

3.8 What is the lost income from unoccupied properties? [2]

3.9 Insert rows into each table. [2]

3.10 Update the rental for all properties by 5%. [2]

SECTION 2

QUESTION 4

(A) Define two (2) integrity rules for a relational model. [5]

(B). Discuss why it's desirable to enforce these rules. [5]

(C). Describe and define a view? [5]

(D). Discuss the difference between a view and a base relation. [5]

QUESTION 5

(A). What are the two (2) major components of SQL? [5]

(B). What functions do they serve? [5]

(C). Describe at least five (5) advantages of SQL. [5]

(D). Describe at least five (5) disadvantages of SQL. [5]

QUESTION 6

(A). Describe the five (5) components of the of the DBMS environment. [5]

(B). Discuss how they relate to each other. [5]

(C). Describe at least four (4) advantages of the DBMS; [5]

(D). Describe at least four (4) disadvantages of the DBMS; [5]

QUESTION 7

(A). Discuss the functionality and importance of the Integrity Enhancement Feature (IEF). [5]

(B). Discuss several advantages and disadvantages of views. [5]

(C). What restrictions are necessary to ensure that a view is updateable? [5]

(D). Describe how the access controls mechanism of SQL work. [5]

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End of Examination