Université Libanaise
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Br. I

الجامعة اللبنانية
كلية الاعلام
الفرع الاول

امتحانات: الفصل الثاني
من العام الجامعي ٢٠٢٢/٢٠٢٣

المرحلة: الاجازة	الدورة الاولى	المادة: Database II
السنة المنهجية: الأولى		المدة: ساعتان
الاختصاص: علم البيانات		اسم الاستاذ: د. ليندا محمودي

Part I: (20 points)

1- Define the following terms: DDL, DML, RDBMS.

2- What is the difference between function, stored procedure and triggers?

Part II: Misc. Concepts (15 points)

For each of the following statements, indicate whether it is **TRUE or FALSE.**

(1) As a query language, SQL is more declarative than relational algebra. ✓

(2) The natural join of two relations R(A,B) and S(C,D), which have no common attributes, is equivalent to their Cartesian product. ✗

(3) Triggers can operate on insertion, deletion, and updates. ✓

(4) A user application executes a database Trigger by invoking "RUN TRIGGER trigger-name" ✗

(5) In SQL, we can only use aggregate functions where there is a Group-By clause. ✗

(6) The database administrator and the creator of a resource have all privileges on it. ✓

(7) As a query language, relational algebra is fully declarative, we simply declare what we want, but not how to compute, in formulating a query. ✗

Part III: View & Privileges (25 points)

Consider the following relational schema:

Account (accountID, branchName, balance) / Branch (branchName, street, city, assets)

Customer (customerID, street, city) / Deposit (customerID, accountID, amount)

a- Define a view BIGBranch that gives for each branch its branchName, city, and assets. The branch should have more than 50 accounts and the total balance of all accounts is greater than $1,000,000.

b- Does the view BIGBranch is by default updatable? Explain how we can implement a desirable update on it.

c- Write a SQL statement to give permission to user1 to do (select, update, delete) on this view with the possibility of granting this rights to others, and then deny it from delete option after review the privileges given to this user.

Part IV: Relational Algebra & SQL (15 points)

The following questions refer to the database schema below:

Product (productID, price) / Order (orderID, customerID, productID, price)

Customer (customerID, name, age)

a- Write a query in relational algebra to return the names of senior customers (older than 60).

b- Write a query in relational algebra to return the names of customers who didn't order any product.

c- Write a SQL query to list each product along with its total ordered quantities in descending order of the amount.

Part V: SQL (25 points)

We have an employee database with three tables.

Employee (employeeID, firstname, lastname, office, email, departmentID)

Department (departmentID, departmentName) / Vacations (employeeID, days)

Answer the following queries using SQL.

a- List the office and Email of employee "john Smith"

b- List the number of vacation Days taken by each employee with the name "john Smith".

c- List the firstName and the LastName of all employees who never took a vacation day.

d- List the department Name of every department whose total number of vacation days taken by its employees is the largest among those of all the departments.

Good luck