**Database Management System – cs422 DE**

**Assignment 3 – Week 3 & 4**

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**This assignment is based on lecture 3 & 4 (chapter 6 & 7).**

* Submit your *own work* on time. No credit will be given if the assignment is submitted after the due date.
* Note that the completed assignment should be submitted in .doc, .docx, .rtf or .pdf format only.
* In MCQs, if you think that your answer needs explanation to get credit then please write it down.
* You are encouraged to discuss these questions in the Sakai forum.

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1. **The database schema is written in**(A) HLL (B) DML (C) DDL (D) DCL  
   ANS:

(C) DDL

1. **The language used in application programs to request data from the DBMS is referred to as**(A) DML (B) DDL (C) VDL (D) SDL  
   ANS:

(A) DML

1. **Count function in SQL returns the number of**(A) values (B) distinct values (C) groups (D) columns

ANS:

(A) values

1. **‘AS’ clause is used in SQL for**(A) Selection (B) Rename (C) Join (D) Projection ANS:

(B) Rename

1. **Which is not a DDL statement ?**(A) Create (B) Alter (C) Delete (D) Drop

ANS:

(C) Delete

1. **The statement in SQL which allows to change the definition of a table is**(A) Alter (B) Update (C) Create (D) Select

ANS:

(A) Alter

1. **What restrictions apply to the use of the aggregate functions within the SELECT statement? How do nulls affect the aggregate functions?**

ANS:

An aggregate function can be used only in the SELECT list and in the HAVING clause.

Aggregate functions apart from COUNT eliminates nulls first and operates only on the remaining non-null values. COUNT(\*) counts all the rows of a table, regardless of whether nulls or duplicate values occur

1. **List the order in which the WHERE, GROUP BY, and HAVING clauses are executed by the database in the following SQL statement.**

SELECT section\_id, COUNT(\*), final\_grade  
 FROM enrollment  
 WHERE TRUNC(enroll\_date) > TO\_DATE('2/16/2003', 'MM/DD/YYYY')  
 GROUP BY section\_id, final\_grade HAVING COUNT(\*) > 5

ANS:

First the WHERE clause is executed, then the GROUP BY, and lastly the HAVING clause is applied.

1. **Explain how the GROUP BY clause works. What is the difference between WHERE and HAVING clauses?**

ANS:

Group By is used to group rows that have the same values. The Where Clause lets you filter records based on the data available in a table while Having helps you applying filter on the results of certain aggregation function.

1. **Can the ANY and ALL operators be used on the DATE data type? Write a simple query to prove your answer.**ANS:

**Yes, Any and All can be used on the DATE data type.**

SELECT ProductName  
FROM Products  
WHERE expiryDate = ANY (SELECT ProductID FROM OrderDetails WHERE YEAR(orderDate) > 2018 );

1. **The following SQL lists staffs who work in branch at ‘163 Main St’.**

SELECT staffNo, fName, lName, position  
FROM Staff  
WHERE branchNo =  
 (SELECT branchNo  
 FROM Branch  
 WHERE street = ‘163 Main St’);

**Will there be any problem with this query if there is more than one branch at ‘163 Main St’?  
If yes, then explain the problem and right down the correct query.**ANS:

Yes, there will be problem when we have more than one branches matching the giving criteria.

Syntax for where clause with equal operator expects only one argument on the right side of the = operator. In the scenario when we have more than one result query will fail to execute and result in exception. When we expect more than one result we can use ‘In' statement to consider multiple returning values.

See below for example.

SELECT staffNo, fName, lName, position

FROM Staff WHERE branchNo In(SELECT branchNo FROM Branch WHERE street = ‘163 Main St’)

1. **What is Referential integrity constraint?**  
   ANS:

Referential Integrity is set of constraints applied to foreign key which prevents entering a row in child table (where you have foreign key) for which you don't have any corresponding row in parent table i.e. entering NULL or invalid foreign keys.

1. **What is the difference between primary key and unique key?**ANS:

* Primary key used to serve as a unique identifier for each tuple whereas Unique Key uniquely determines a tuple which isn’t primary key.
* Primary key will not accept null values whereas unique key does.
* A database table can only have one primary key whereas there can be multiple unique keys

1. **Solve the question 7.10 from the course text book (5th edition).**ANS:

CREATE DOMAIN HotelNumber AS CHAR(4);

CREATE TABLE Hotel(

hotelNo HotelNumber NOT NULL,

hotelName VARCHAR(20) NOT NULL,

city VARCHAR(50) NOT NULL,

PRIMARY KEY (hotelNo));

1. **Solve the question 7.12 from the course text book (5th edition).**ANS:

CREATE TABLE BookingOld( hotelNo CHAR(4) NOT NULL,

guestNo CHAR(4) NOT NULL,

dateFrom DATETIME NOT NULL,

dateTo DATETIME NULL,

roomNo VARCHAR(4) NOT NULL);

INSERT INTO BookingOld( SELECT \* FROM Booking WHERE dateTo < DATE’2013-01-01’);

DELETE FROM Booking WHERE dateTo < DATE’2013-01-01’;