University Of Engineering and Technology, Lahore
Computer Engineering Department

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Date: …… **Signatures:** ……

Course Name: Database Systems	**Course Code: CMPE-332L**
Assignment Type: Lab	**Dated: 25-09-2023**
Semester: 5th	**Session: 2021**
Lab/Project/Assignment #: Lab 4	**CLOs to be covered: CLO1**
Lab Title: Nested queries (Sub queries)	**Teacher Name: Ms. Darakhshan**

Lab Evaluation:

CLO1	Construct DML queries to retrieve and store data in different relations					
Levels (Marks)	**Level1**	**Level2**	**Level3**	**Level4**	**Level5**	**Level6**
Cognitive (5)						
					Total	**/5**

Rubrics for Current Lab:

Scale	**Marks**	**Level**	**Rubric**
Excellent	**5**	L1	Completed all questions and understands how nested query works.
Very Good	**4**	L2	Completed 4 questions and understands how tasks were solved.
Good	**3**	L3	Completed 3 questions and understands significant number of problems.
Basic	**2**	L4	Completed 2 questions and weak understanding.
Barely Acceptable	**1**	L5	Completed 1 question and weak understanding.
Not Acceptable	**0**	L6	Lab missed or solved none of the problems.

Rubrics for Homework

Scale	**Marks**	**Level**	**Rubric**
Excellent	**5**	L1	Completed all 12 questions. Understands the concept of Join. No plagiarism involved. Can re-write query for a different schema related to the mentioned concepts. No plagiarism
Very Good	**4**	L2	Completed 9 questions. Understands the question and can re-write query related to the learned concepts. No plagiarism
Good	**3**	L3	Completed 6 questions. Understands the question and can re-write query related to the learned concepts. No plagiarism
Barely Acceptable	**1**	L4	Completed 3 questions. Understands the question and can re-write query related to the learned concepts. No plagiarism
Not Acceptable	**0**	L5	Completed none or missed lab.

Homework Questions:

Answer these queries in the context of Northwind schema and solve them using subqueries only.

1. Give the names of customers whose orders were delayed. Your answer should have the following schema.

```
SELECT CustomerID, ContactName
FROM Customers
WHERE CustomerID IN (SELECT CustomerID
FROM Orders
WHERE ShippedDate > RequiredDate)
```

2. Give the products details with its supplier company. Products(ProductName, SupplierName)

```
SELECT ProductName, ContactName, CompanyName
FROM Products,Customers
WHERE SupplierID IN (
       SELECT SupplierID
       FROM Suppliers)
```

3. Give the name of top products which have highest sale in the year 1998.

```
    SELECT TOP 10 Products.ProductName,
              (
                SELECT SUM([Order Details].Quantity)
                FROM [Order Details]
                WHERE [Order Details].ProductID = Products.ProductID
              ) AS TotalSales
FROM Products
WHERE Products.ProductID IN (
    SELECT [Order Details].ProductID
    FROM [Order Details]
    WHERE [Order Details].OrderID IN (
        SELECT Orders.OrderID
        FROM Orders
        WHERE YEAR(Orders.OrderDate) = 1998))
   ORDER BY TotalSales DESC
```

4. Give the name of employees with its manager name. Schema should have the following schema. (EmployeeName, ManagerName) University Of Engineering and Technology, Lahore Computer Engineering Department

```
       SELECT CONCAT(Employees.FirstName, ' ', Employees.LastName) AS
EmployeeName,
       (
           SELECT CONCAT(Manager.FirstName, ' ', Manager.LastName)
```

```
            FROM Employees AS Manager
            WHERE Manager.EmployeeID = Employees.ReportsTo
        ) AS ManagerName
FROM Employees
ORDER BY EmployeeName
```

5. Give the full names of managers who have less than two employees.

```
 SELECT CONCAT(Managers.FirstName, ' ', Managers.LastName) AS ManagerName
FROM Employees AS Managers
WHERE Managers.EmployeeID NOT IN (
    SELECT DISTINCT ReportsTo
    FROM Employees AS Employees
    WHERE ReportsTo IS NOT NULL)
```

6. List all the products whose price is more than average price.

```
 SELECT PRODUCTID, Productname, UnitPrice
FROM Products
WHERE UnitPrice > (
  SELECT AVG(UnitPrice)
  FROM Products)
```

7. Find second highest priced product without using TOP statement

```
 SELECT ProductName, UnitPrice
FROM Products
WHERE UnitPrice = (
  SELECT MAX(UnitPrice)
  FROM Products
  WHERE UnitPrice < (
    SELECT MAX(UnitPrice)
    FROM Products))
```

8. Are there any employees who are elder than their managers? List that names of those employees. Schema should look like this Employees(EmployeeName,ManagerName,EmployeeAge,ManagerAge)

```
 SELECT CONCAT(Employees.FirstName, ' ', Employees.LastName) AS EmployeeName,
        (
            SELECT CONCAT(Manager.FirstName, ' ', Manager.LastName)
            FROM Employees AS Manager
            WHERE Manager.EmployeeID = Employees.ReportsTo
        ) AS ManagerName,
        Employees.BirthDate AS EmployeeAge,
        (
            SELECT Manager.BirthDate
            FROM Employees AS Manager
            WHERE Manager.EmployeeID = Employees.ReportsTo
        ) AS ManagerAge
FROM Employees
WHERE Employees.BirthDate > (
    SELECT Manager.BirthDate
    FROM Employees AS Manager
```

```
    WHERE Manager.EmployeeID = Employees.ReportsTo)
```

9. List the names of products which were ordered on 8th August 1997.

```
 SELECT DISTINCT Products.ProductName
FROM Products
WHERE Products.ProductID IN (
  SELECT [Order Details].ProductID
  FROM [Order Details]
  WHERE [Order Details].OrderID IN (
    SELECT Orders.OrderID
    FROM Orders
    WHERE CONVERT(DATE, Orders.OrderDate) = '1997-08-08'))
```

10. List the names of suppliers whose supplied products were ordered in 1997.

```
 SELECT DISTINCT Suppliers.CompanyName
FROM Suppliers
WHERE Suppliers.SupplierID IN (
  SELECT Products.SupplierID
  FROM Products
  WHERE Products.ProductID IN (
    SELECT [Order Details].ProductID
    FROM [Order Details]
    WHERE [Order Details].OrderID IN (
      SELECT Orders.OrderID
      FROM Orders
      WHERE YEAR(Orders.OrderDate) = 1997)))
```

11. How many employees are assigned to Eastern region? Give count.

```
 SELECT COUNT(*) AS EmployeeCount
FROM Employees
WHERE Region IN (
  SELECT RegionDescription
  FROM Region
  WHERE RegionDescription = 'Eastern')
```

12. Give the name of products which were not ordered in 1996.

```
 SELECT ProductName
FROM Products
WHERE ProductID NOT IN (
  SELECT DISTINCT ProductID
  FROM [Order Details]
  WHERE OrderID IN (
    SELECT OrderID
    FROM Orders
    WHERE YEAR(OrderDate) = 1996 ))
```