

Title:

Implementation of DCL in SQL

Intro:

In this lab assignment, we will explore Data Control Language (DCL) commands in SQL. DCL commands are used to control access to data in a database. We will cover the GRANT and REVOKE commands, which are used to manage permissions for users on various database objects.

Code:

Creating a Table (for reference):

sql

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```
CREATE TABLE Employees (  
    EmployeeID INT PRIMARY KEY,  
    FirstName VARCHAR(50),  
    LastName VARCHAR(50),  
    Department VARCHAR(50),  
    Salary DECIMAL(10, 2)  
);  
  
INSERT INTO Employees (EmployeeID, FirstName, LastName, Department,  
Salary)  
VALUES  
(1, 'Alice', 'Brown', 'HR', 50000.00),  
(2, 'Bob', 'Smith', 'Engineering', 70000.00),  
(3, 'Charlie', 'Davis', 'Marketing', 60000.00);
```

Creating Users:

sql

Copy code

```
CREATE USER 'user1'@'localhost' IDENTIFIED BY 'password1';
CREATE USER 'user2'@'localhost' IDENTIFIED BY 'password2';
```

Granting Permissions:

```
sql
Copy code
-- Grant SELECT and INSERT permissions to user1
GRANT SELECT, INSERT ON Employees TO 'user1'@'localhost';

-- Grant ALL privileges to user2
GRANT ALL PRIVILEGES ON Employees TO 'user2'@'localhost';
```

Revoking Permissions:

```
sql
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-- Revoke SELECT permission from user1
REVOKE SELECT ON Employees FROM 'user1'@'localhost';

-- Revoke all privileges from user2
REVOKE ALL PRIVILEGES ON Employees FROM 'user2'@'localhost';
```

Output:

After Granting Permissions:

- **User1:**
 - Has SELECT and INSERT permissions on the Employees table.
- **User2:**
 - Has ALL PRIVILEGES (e.g., SELECT, INSERT, UPDATE, DELETE, etc.) on the Employees table.

After Revoking Permissions:

- **User1:**
 - No longer has SELECT permission on the Employees table.

- **User2:**
 - No longer has any privileges on the Employees table.

Conclusion:

In this lab, we demonstrated the use of DCL commands in SQL. The GRANT command allows us to provide specific permissions to users on database objects, while the REVOKE command removes those permissions. These commands are essential for managing user access and maintaining security within a database environment. Proper use of DCL commands ensures that users have appropriate access levels according to their roles and responsibilities.