Extra Credit Assignment  
IA 643 Database Security  
Fall 2023

Due date: 11:59 am, November 8, 2023 Extra Bonus: 4 points to be added to your Mid-term exam.   
Submission Requirement: D2L Bonus Project#2 folder  
Note: No Partial credits given.

Assignment  
A group of 200 users are cleared for accessing very sensitive information stored in a file named **Secrets**. These users’ information including their user name, password, first name, last name and their home department are stored in Acct\_Users table.

Write a PL/SQL program to grant SELECT privilege on the **Secrets** file to the group of 200 users stored in Acct\_Users table.

Hints: You may use the following code to set up your testing environment.

DROP TABLE ACCT\_USERS;  
CREATE TABLE Acct\_Users(  
UserName Varchar2(8) CONSTRAINT Acct\_User\_PK primary key,  
PassCode VARCHAR2(20),  
FirstName VARCHAR2(25),  
LastName VARCHAR2(30),  
Dept\_ID NUMBER (2));  
INSERT INTO Acct\_Users VALUES('ASmith', 'F3%nYGh\_I', 'Adam', 'Smith', 25);  
INSERT INTO Acct\_Users VALUES('RJohnson', 'TH\*nLGhP2A', 'Rob', 'Johnson', 25);  
INSERT INTO Acct\_Users VALUES('WGates', 'SJ\*ChaDog45', 'Will', 'Gates', 18);  
INSERT INTO Acct\_Users VALUES('YBush', 'Sh34Yan\*FULn', 'York', 'Bush', 23);  
INSERT INTO Acct\_Users VALUES('JHemming', '7TYGirH$KT', 'John', 'Hemming', 18);  
INSERT INTO Acct\_Users VALUES('HLee', 'Jilingan\*5FULn', 'Henry', 'Lee', 18);  
DROP USER ASmith; DROP USER RJohnson; DROP USER JHemming; DROP USER WGates; DROP USER YBush; DROP USER HLEE;  
CREATE USER ASmith IDENTIFIED BY ASmith;  
CREATE USER RJohnson IDENTIFIED BY RJohnson;  
CREATE USER WGates IDENTIFIED BY WGates;  
CREATE USER JHemming IDENTIFIED BY JHemming;  
CREATE USER YBush IDENTIFIED BY YBush;  
CREATE USER HLee IDENTIFIED BY HLee;  
GRANT CONNECT, RESOURCE TO ASmith;  
GRANT CONNECT, RESOURCE TO RJohnson;   
GRANT CONNECT, RESOURCE TO JHemming;   
GRANT CONNECT, RESOURCE TO WGates;   
GRANT CONNECT, RESOURCE TO YBush;   
GRANT CONNECT, RESOURCE TO HLee;   
DROP TABLE Secrests;  
CREATE TABLE Secrets(ID Number(12) CONSTRAINT Secr\_ID\_PK PRIMARY KEY,  
Rec\_ID VARCHAR2(10),  
Rec\_Keywords VARCHAR2(145),  
Rec\_Path VARCHAR2(16));

SOLUTION

To grant SELECT privilege on the Secrets table to the group of 200 users stored in Acct\_Users table, we can create a PL/SQL block that loops through the Acct\_Users table and grants SELECT privilege to each user. Here is an example PL/SQL program that achieves this:

BEGIN

FOR user\_rec IN (SELECT UserName FROM Acct\_Users) LOOP

EXECUTE IMMEDIATE 'GRANT SELECT ON Secrets TO ' || user\_rec.UserName;

END LOOP;

END;

/

Note that the EXECUTE IMMEDIATE statement is used to execute the GRANT statement dynamically for each user. The GRANT statement is constructed as a string and then executed with EXECUTE IMMEDIATE. The GRANT statement grants SELECT privilege on the Secrets table to the user specified in the loop.

Also, make sure that you have the necessary privileges to grant SELECT privilege on the Secrets table to other users. If you do not have the necessary privileges, you may need to ask your database administrator to grant them to you.

In the PL/SQL block provided, user\_rec is a variable that represents a record in the cursor FOR loop. The FOR user\_rec IN statement is a cursor FOR loop that selects each user name from the Acct\_Users table and assigns it to the user\_rec variable, one at a time, in each iteration of the loop.

FOR user\_rec IN (SELECT UserName FROM Acct\_Users) LOOP

-- loop body

END LOOP;

user\_rec is a record variable that holds the data for the current row fetched from the Acct\_Users table. In this case, user\_rec has one field, UserName, which holds the user name of the current row in the Acct\_Users table. The UserName field of user\_rec can be accessed using the dot notation, as shown in the following statement:

EXECUTE IMMEDIATE 'GRANT SELECT ON Secrets TO ' || user\_rec.UserName;

In the above statement, user\_rec.UserName is used to refer to the user name of the current row in the Acct\_Users table. The || operator is used to concatenate the user name with the rest of the GRANT statement.