MTAT.03.105
Introduction to Databases

Lecture #12
DB Administration

Ljubov Jaanuska
(ljubov.jaanuska@ut.ee)
Lecture 11.  Summary

- Functions
- Procedures
Lecture 11. What will you learn

• Users
• User rights
• Revision on queries
DBA used

So far:

- User ID: dba
- Password: sql

- dba (database administrator) - main user of PCA database
DBA user
User management

- If there is a need to share the data of the database, create an account for a new user
Create an account for a new user

Create a user or change his password:

General syntax:

```
GRANT CONNECT TO <user_name>
[IDENTIFIED BY <password>]
```

Example

Create user `student`, set password as `tud`:

```
GRANT CONNECT TO student IDENTIFIED BY 'tud'
```
Note!

GRANT CONNECT TO student

- Can be executed without any error
- User student will not be able to log in into the DB because he has not been assigned a password
- A password is compulsory!
User student
Connect to iSQL as a student

Connect to a SQL Anywhere Database

Authentication: Database

User ID: student
Password: ***

Action: Start and connect to a database on this computer

Database file: /Users/Lj/Desktop/AB eng/PCA.db
Encryption key: 
Database name: 
Server name: 
Start line: 

Stop database after last disconnect
Connect to iSQL as a student

Pay attention to the DB you are connected (PCA), user name (student) and the server where the DB is launched (PCA)
Can user student make queries?

SELECT * FROM player
  -> Table ‘player’ not found

SELECT * FROM dba.player
  -> Permission denied

The data are not shown either can be used since by default a new user is not given any rights.

Why are there different errors? The keyword is a user group (dba)
User groups

- **User is not assigned to the group**
  - the user can manipulate with the objects according to the assigned rights
  - if there is no right assign
    - the objects are not visible (player -> *Table not found*)
    - the objects are visible, but cannot be operated on, if the user knows the group name (dba.player -> *permission denied*)

- **Users belong to the group**
  - users can see the objects (tables, views etc.) since they are in the group;
  - if there is no right to manipulate with the object -> *permission denied*
Create group

Create a **group** (in SQL Anywhere: create a user with an extended role):

- `GRANT GROUP TO dba` (outdating statement)
- `CREATE ROLE FOR User dba` (since SQL Anywhere 17)

(the user *dba* is assigned an extended role, now *dba* acts as a group and new users can be added to the group *dba*)
Add members to the group

GRANT MEMBERSHIP IN GROUP dba TO student
(outdating statement)

GRANT ROLE dba TO student  (since SQL Anywhere 17)
(the user student is added to the group dba)
Queries

SELECT * FROM player
  Permission denied

SELECT * FROM dba.player
  Permission denied

Group members can see objects of the group members without owner name (dba.)
User rights

GRANT {right1, ...} ON <table> TO <user_name>

Rights:
  ALL
  ALTER
  DELETE
  INSERT
  SELECT [(column1,...)]
  UPDATE [(column1,...)]
  RESOURCE (right to create tables, views, etc. in the DB)
Assign rights

GRANT SELECT (p_name) ON player TO student

SELECT p_name FROM player ok!
SELECT * FROM player error!
(If select right is not assign to all columns, a query execution throws an error!)

To assign a right to all members of the group, assign the right to the whole group

GRANT SELECT ON player TO dba
(Now all members of the group dba can see the data of table player)
User and roles

Create a role with specific rights and assign the role to certain users:

```sql
CREATE USER student7 IDENTIFIED BY 'tud7';
CREATE ROLE observer;
GRANT SELECT ANY TABLE TO observer;
GRANT ROLE observer TO student7;
Grant the observer right along with the admin rights
GRANT ROLE observer TO student7 WITH ADMIN OPTION;
```
Revoke group and the rights

Revoke one user:
REVOKE MEMBERSHIP IN GROUP dba FROM student
or
REVOKE ROLE DBA FROM student

Revoke a group and its members from the group:
REVOKE GROUP FROM dba
or
DROP ROLE FROM USER dba WITH REVOKE

Revoke right to see players’ names
REVOKE SELECT (p_name) ON player FROM student
Practice

1. Create two users (grup1, grup2) and give them the extended role
2. Assign them a right to create tables (resource)
3. Let both users create a table Test:
   - Open iSQL for each user
   - Create table Test in which there is only one column varchar(30)
   - Add name of the owner in the table Test
4. Assign user student to both groups
5. Assign user student a right to make queries to both tables Test
6. Make query:
   SELECT * FROM Test

Make a print screen of your screen and submit picture by the 2nd of May. Add a comment how the result can be resolved.
Groupwork

1. How many games were played in every tournament by each player?

2. *(ternary)* Show information (First_name, Second_name, Club_name) of the players who have won at least two times during a tournament.

3. *(quaternary)* Show name of the players (first name, second name) and the club names if the player has won exactly two times during tournament “Kolme klubi kohtumine”.

4. Create a procedure with a parameter for the tournament number. The procedure must show the players’ names and club names if the player played against his club member during the specified tournament and the game ended with a draw.