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## Laboratory 6

### Using `SELECT` statement (3), implementing advanced data manipulations, creating views, and granting access rights

It is expected that you do Homework 6 before implementation of the tasks included in Laboratory 6.

This laboratory consists of 4 tasks.

#### Task 1 Implementing nested queries with negated existential quantifiers

Download and unzip a file `scripts6.zip`. Connect to your database account on any of the available Oracle database servers and execute a script `dbcreate.sql` to create a sample database. A script `dbdrop.sql` drops a sample database.

Create SQL script `task1.sql` that implements the following queries as `SELECT` statements with one or more `NOT EXISTS` clauses.

- (1) *Find the titles of all positions that have no applications.*
- (2) *Find the full names of applicants who submitted no applications so far.*
- (3) *Find the titles of all positions with the largest salary.*

Execute a script `task1.sql` with SQL\*Plus option `ECHO` set to `ON` and save a report from the execution in a file `task1.lst`. Put a SQL\*Plus statement `SET ECHO ON` in the first line of the script. A file `task1.lst` will be submitted at the end of laboratory class.

Execute SQL script `dbdrop.sql` to drop all relational tables created in implementation of this task.

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## Task 2 Implementing queries with ANY and ALL clauses

Connect to your database account on any of the available Oracle database servers and execute a script `dbcreate.sql` to create a sample database. A script `dbdrop.sql` drops a sample database.

Create SQL script `task2.sql` that implements the following queries as `SELECT` statements with either `ANY` or `ALL` clauses.

- (1) *Find the full names of applicants who submitted at least one application earlier than an applicant number 1.*
- (2) *Find the titles of all positions with the largest salary.*
- (3) *Find the full names of employees whose all applications are earlier than applications of an applicant number 7.*

Execute a script `task2.sql` with SQL\*Plus option `ECHO` set to `ON` and save a report from the execution in a file `task2.lst`. Put a SQL\*Plus statement `SET ECHO ON` in the first line of the script. A file `task2.lst` will be submitted at the end of laboratory class.

Execute SQL script `dbdrop.sql` to drop all relational tables created in implementation of this task.

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### Task 3 Implementing advanced data manipulations

Connect to your database account on any of the available Oracle database servers and execute a script `dbcreate.sql` to create a sample database. A script `dbdrop.sql` drops a sample database.

Create SQL script `task3.sql` that implements the following modifications of a sample database.

- (1) *Create a relational table `TOTAPPS(anum, totap)` that contains information about the numbers of applicants (`anum`) and the total number of applications (`totap`) submitted by each applicant. If an applicant submitted no application then a value of attribute `totap` should be equal to zero. Load data to a relational table `TOTAPPS`.*
- (2) *Increase by 10% salaries of all positions that have no applications now.*
- (3) *Remove all applicants that submitted no applications.*

Execute a script `task3.sql` with SQL\*Plus option `ECHO` set to `ON` and save a report from the execution in a file `task3.lst`. Put a SQL\*Plus statement `SET ECHO ON` in the first line of the script. A file `task3.lst` will be submitted at the end of laboratory class.

Execute SQL script `dbdrop.sql` to drop all relational tables created in implementation of this task.

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#### **Task 4 Creating relational views and granting access rights**

Connect to your database account on any of data-pc01 .. data pc40 Oracle database servers and execute a script `dbcreate.sql` to create a sample database. A script `dbdrop.sql` drops a sample database.

Create SQL script `task4.sql` that implements the following actions.

- (1) *Create a relational view `VAPPS(p#, totap)` that contains information about the numbers of positions (`p#`) and the total number of all applications (`totap`) for each position. The positions that have no applications must have a value of attribute `totap` equal to zero. Use a view `VAPPS` to find the titles and salaries of all positions that have more than one application.*
- (2) *Grant to a user `SCOTT` read access rights on full information about all applicants who submitted more than one application.*
- (3) *Grant to a user `SCOTT` reference access right to a primary key in a relational table `APPLIES`.*

Execute a script `task4.sql` with SQL\*Plus option `ECHO` set to `ON` and save a report from the execution in a file `task4.lst`. Put a SQL\*Plus statement `SET ECHO ON` in the first line of the script. A file `task4.lst` will be submitted at the end of laboratory class.

Execute SQL script `dbdrop.sql` to drop all relational tables created in implementation of this task.

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## Submission

Zip the files `task1.lst`, `task2.lst`, `task3.lst`, and `task4.lst` obtained as the solutions of tasks 1, 2, 3, and 4 into a file `solutions6.zip` and submit the file through Moodle as the following.

- (1) Connect to eLearning.
- (2) Navigate to a folder `SUBMISSIONS`.
- (3) Click at `LABORATORY 6`, `Submit your solutions here` link.
- (4) Click at `Add Attachments` button.
- (5) Navigate to a location where a file `solutions6.zip` has been saved.
- (6) Select the file and click at `Open` button.
- (7) Click at `Submit` button.
- (8) Click at `OK` button to return to `Home Page`.

## End of laboratory 6

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