**Lab Work 6**

**Relational algebra (University database, individual work)**

**Goal:** to create a new database and implement queries for the following tasks using SQL and PostgreSQL DBMS. Write only one query for each task. A result of the work is a report (\*.doc or \*.pdf) with SQL scripts and screenshots of the result (for each task).

**Tasks:**

1. Create a new database with the following SQL code:

*CREATE TABLE Students(*  
*stud\_id int PRIMARY KEY,*  
*fname varchar(20),*  
*lname varchar(20)*  
*);*

*CREATE TABLE Departments(*  
*dep\_id int PRIMARY KEY,*  
*name varchar(10)*  
*);*

*CREATE TABLE Teachers(*  
*teach\_id int PRIMARY KEY,*  
*fname varchar(20),*  
*lname varchar(20),*  
*dep\_id int REFERENCES Departments(dep\_id)*  
*);*

*INSERT INTO Students VALUES (1,'A','A'), (2,'B','B');*

*INSERT INTO Departments VALUES (1,'AAA'), (2,'BBB');*

*INSERT INTO Teachers VALUES (1,'B','B', 2), (2,'C','C', 2), (3,'D','D', null);*

2. Show last names of all students (only last names, not all columns).

3. Show last names of teachers whose first names = "B"

4. Show information about all teachers and all students in the one table (with 2 columns: first name, last name).

5. Show information about students except persons who are students and teachers at the same time (in the table with 2 columns: first name, last name).

6. Show information only about persons who are students and teachers at the same time (in the table with 2 columns: first name, last name).

7. Show teachers and their departments in the following table: teachers's last name, department name. Include only teachers which have departments and departments which have teachers.

8. Show teachers and their departments in the following table: teachers's last name, department name. In this task include also teachers which at this moment have not any department.

9. Show teachers and their departments in the following table: teachers' last name, department name. In this task include also departments which at this moment have not any teachers.

10. Show teachers and their departments in the following table: teachers' last name, department name. In this task include also teachers which at this moment have not any department as well as departments which at this moment have not any teachers.

**Upload:** a report (\*.doc(x)/ \*.pdf)

**Materials:**

Lectures 7,8;

[www.postgresql.org/docs/manuals/](http://www.postgresql.org/docs/manuals/)