EXPERIMENT USING POSTGRESQL DBMS

Exercise 1:

Given a database with relations as follow:

Lecturers:

IDL	FullName	Address	DOB
GV01	Vu Tuyet Trinh	Hoang Mai, Hanoi	10/10/1975
GV02	Nguyen Nhat Quang	Hai Ba Trung, Hanoi	03/11/1976
GV03	Tran Duc Khanh	Dong Da, Hanoi	04/06/1977
GV04	Nguyen Hong Phuong	Tay Ho, Hanoi	10/12/1983
GV05	Le Thanh Huong	Hai Ba Trung, Hanoi	10/10/1976

Projects:

IDP	Title	Level	Cost
DT01	Grid Computing	A	700
DT02	Knowledge Discovery	B	300
DT03	Text Classification	B	270
DT04	Automatic English-Vietnamese Translation	C	30

Participation:

IDL	IDP	Duration
GV01	DT01	100
GV01	DT02	80
GV01	DT03	80
GV02	DT01	120
GV02	DT03	140
GV03	DT03	150
GV04	DT04	180

Requirements:

A. Create a database named **QLKH**, create above tables and insert data. Notice: Two attributes **IDL** and **IDP** in table **Participation** refer attributes which have the same names in Lecturers and Projects.

B. Write SQL statements so that:

1. List lecturers' information whose address are in "Hai Ba Trung" district, order by full name descending.
2. List {Full name, Address, DOB} information of lecturers who participated "Grid computing" project.
3. List {Full name, Address, DOB} information of lecturers who participated "Grid computing" project OR "Automatic English-Vietnamese Translation" project.
4. Find lecturers who joined at least in two projects.
5. Find the full name of the lecturers who took part in more projects than others did
6. Find the cheapest project.
7. Show the name and DOB of lecturers who live in Tay Ho district and their project's title
8. Find the name of lecturers who was born before 1980 and joined the "Text Classification" project.
9. For each lecturers, list IDL, full name and the total of duration.
10. Lecturer named Ngo Tuan Phong, born on 08/09/1986, lives in "Dong Da, Hanoi", join doing scientific research. Please insert this information into **Lecturers** table.
11. Lecturer named Vu Tuyet Trinh moved to "Tay Ho, Hanoi". Please update this information.
12. Lecturer with IDL "GV02" no longer participate any projects. The information relating to this lecturer should be crossed out of database. Please complete this command.

C. Back up and restore the above database.

D.

1. Create two login accounts for Ngo Tuan Phong (username: phongnt, password: phong123), and Nguyen Hong Phuong (username: phuongnh, password: phuong123). These two lecturers have access rights onto QLKH database, described as follows:
    - Ngo Tuan Phong has right to **SELECT** in Lecturers and Participants table.
    - Nguyen Hong Phuong has right to create tables, views in database.
2. Create privilege group with all rights on all database objects for Vu Tuyet Trinh and Tran Duc Khanh

Exercise 2:

Consider the following relations:
Student(snum: integer, sname: string, major: string, level: string, age: integer)
Class(name: string, meets_at: time, room: string, *fid: integer*)
Enrolled(*snum: integer, cname: string*)
Faculty(fid: integer, fname: string, deptid: integer)

Write the following queries in SQL. No duplicates should be printed in any of the answers.

1. Find the name of all juniors (level = JR) who are enrolled in a class taught by I. Teach.
2. Find the age of the oldest student who is either a History major or enrolled in a course taught by I. teach.
3. Find the names of all classes that either meet in room R128 or have five or more students enrolled.
4. Find the names of all students who are enrolled in two classes that meet at the same time.
5. Find the names of faculty members who teach in every room in which some class is taught.
6. Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.
7. Print the level and the average age of students for that level, for each level.
8. Print the level and the average age of students for that level, for all levels except JR
9. For each faculty member that has taught classes only in room R128, print the faculty member's name and the total number of classes she or he has taught.
10. Find the names of students enrolled in the maximum number of classes.
11. Find the names of students not enrolled in nay class.
12. For each age value that appears in Students, find the level value that appears most often. For example, if there are more FR level students aged 18 than SR, JR, or SO students aged 18, you should print the pair (18, FR).