

## Coursework Instructions Milestone 4: Database Access from a Programming Language

The goal of the fourth part of your IDA project is to

1. define transactions running on your PostgreSQL database, and
2. create an application program in Java by which a user can access the database.

You will have an occasion to apply the material of the lectures on SQL, on transactions and on JDBC.

### Transactions

As a preparation for writing your Java application, define a set of *transactions* to be performed on your database. Groups of three should specify at least two, groups of four at least three (types of) transactions.

Each of the following features should occur in at least one transaction:

1. Update
2. Prepared statement
3. Rollback
4. Savepoint
5. Isolation level.

### Java Application

Write a simple Java application that runs the transactions by connecting to the database via JDBC.

There is no need for a graphical user interface or anything fancy. A simple command line interface where the user chooses between options using numbers will do.

In order to connect to the PostgreSQL database you have to download a JDBC driver for PostgreSQL, which you find on the Web at

`http://jdbc.postgresql.org/download.html.`

You also have to set the classpath so that Java can find the archive file containing the driver. Suppose you download the archive

`postgresql-8.4-701.jdbc4.jar`

from the download page, create a directory `Java` immediately beneath your home directory, and store the archive in that directory. You make the driver accessible by adding the path `~/Java/postgresql-8.4-701.jdbc4.jar` to the paths in the shell variable `CLASSPATH`.

If you use the bash shell, you do so by writing into the file `.bashrc` the command

```
export CLASSPATH=$CLASSPATH:~/Java/postgresql-8.4-701.jdbc4.jar
```

If the name of your database is `mydb` on the machine `database.inf.unibz.it`, you create a connection to that database by using the URL

`jdbc:postgresql://database.inf.unibz.it/mydb.`

## **Deliverables**

The deliverables will be

1. a brief report that for each transaction
  - describes what it does and why it is interesting;
  - gives the queries, updates etc. of which the transaction consists.
2. a report on the Java application containing
  - a short description of its functionality;
  - a short description of the design (which are the classes and what they are good for);
  - the source code;
  - the listing of a sample interaction.

## **Deadline and Submission**

The work is to be submitted by publishing it on the web site of your IDA group. The deadline is

Wednesday, 23 December, midnight.