

# CS 3380 Lab Assignment 5

## 1 Directions

This assignment must be completed by **Sunday, March 1st at 11:59 PM**. You must upload your PHP code to Blackboard. The uploaded file should be named `index.php` (or a compressed file as described in Section ??). Your code must also be hosted on your Babbage account. Your lab 5 submission should be reachable and functional through the following URL:

`http://babbage.cs.missouri.edu/~<pawprint>/cs3380/lab5/index.php`

If that URL does not work you will lose points. Late submissions, either for the files or the URL, will not be accepted.

## 2 Goals

- Using PHP to create a functional web application
- Query using prepared statements with `pg-prepare` and `pg-execute`
- Using the `LIKE` or `ILIKE` operator
- SQL `INSERT`, `UPDATE` and `DELETE` statements

## 3 Tasks

### 3.1 Download

Begin by downloading an SQL dump file by executing the following commands in your terminal:

```
mkdir ~/public_html/cs3380/lab5
cd ~/public_html/cs3380/lab5
wget http://babbage.cs.missouri.edu/~klaricm/ss15/cs3380/lab5/lab5.sql
```

Note that you might not be able to copy-paste the above commands. You may need to type them manually into your terminal.

Next, run the `psql` command to login to your database. Then issue the command `\i lab5.sql` to run the commands contained within the SQL file.

### 3.2 Inspect the Data

The `lab5.sql` file will create three tables within the `lab5` schema. These tables will be identical to those used in lab assignment 3. We're creating them in a separate schema for this assignment, so we can manipulate the data contained within the tables.

Recall, to write SQL queries that reference tables held within schemas simply qualifying the table name with the schema name. A simple example follows.

```
SELECT * FROM lab5.city;
```

## 3.3 Implementation

### 3.3.1 Main Page

You will be responsible for creating a PHP script that allows a user to execute a search based on country, city or language name. These correspond to the “name”, “name” and “language” fields in the “country”, “city” and “language” tables respectively.

Your code **must** use `pg_prepare` and `pg_execute` for your queries against the database tables in this assignment. **If you use `pg_query` you will receive a 0 on the assignment.** The point of this assignment is to use prepared statements.

Your page should prompt the user to select what they wish to search for by selecting a radio button<sup>1</sup>. It should also contain a text box that allows for user entered search text to be provided. The query string should be used to perform a prefix matching search using either the `LIKE` or `ILIKE` operator within your SQL query<sup>2</sup>. For example, this means that a search term of “Ta” should match the countries Taiwan, Tajikistan and Tanzania. If you use the case-insensitive `ILIKE` operator, then the search term “ta” would match those same countries; otherwise, using the `LIKE` operator would return no results. I suggest that you use `ILIKE`, but will allow you to use `LIKE` if you wish.

You should print the number of rows returned by a query. All results should be ordered in ascending order by the field that was used to do the search. This means that countries should be sorted using the name field, cities using the name field and languages using the language field.

When presenting search results, there should be two options at the beginning of each row: update and delete. These options should be HTML buttons that can be clicked to execute each action.

Additionally, the `index.php` page for this assignment should have a link to a page that allows for the creation of a new city within the database.

Note, it is **very important** to point your code at the `lab5` schema and not the `lab3` schema for this assignment. Failure to do so, may cause you to modify the data in your lab 3 database which may cause problems as it’s being graded.

### 3.3.2 Update

The update button should present a page where various values can be edited and stored to the database.

The following fields in each table should be editable:

- **country** - local\_name, government\_form, indep\_year, population
- **city** - population, district
- **country\_language** - is\_official, percentage

The update page should show all data for a particular record, but only allow the specified values for each table to be edited.

### 3.3.3 Delete

The delete button shown in search results should trigger a deletion of the corresponding record from the table.

### 3.3.4 Insert

Finally, a user should be allowed to add records to the city table. The id for a city should be populated with the default value (which is the next value from the associated sequence). The name, district and population should be provided by the user in text boxes. The country code should be determined by selection from a drop down box. The drop down box should contain all country **names** (notice that I said names, not codes). This list of country names should be pulled dynamically such that it changes as countries are added or deleted from the database.

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<sup>1</sup><http://www.echoecho.com/htmlforms10.htm>

<sup>2</sup><http://www.postgresql.org/docs/9.1/static/functions-matching.html#FUNCTIONS-LIKE>

### 3.3.5 Miscellaneous

- All queries should list the number of records returned. This is particularly useful when zero records have been returned, so a user is aware the an error did not occur.
- All appropriate error checking should be implemented. I shouldn't be able to "break" your code by providing invalid data for any user input.
- All insert, update, delete actions should provide a useful status message to the user indicating that they either occurred successfully or failed.
- You may find it useful to break your code into multiple PHP files. If you do this, create a tar or zip file containing **all** of your PHP source code and upload that single tar/zip file to Blackboard.
- As always, be sure that your code is not suspect to SQL injection attacks. You do this by passing any user input that's being used in a SQL statement through the PHP `htmlspecialchars` function.

## 4 Comparison

You can compare your version with a working copy found at:

<http://babbage.cs.missouri.edu/~klaricm/ss15/cs3380/lab5/index.php>