Lab 1: Why Databases?
Part II

**Due date:** Thursday, April 8, beginning of the lab period.

# Honor System

**This part of the assignment is handed to each group separately, upon submission of the first part of the lab.**

While each group will recieve the same assignment, I ask you to use the honor system and not directly convey the contents of the assignment to students from the teams that have not yet completed part I of the assignment. Please let other teams concentrate on finishing the first part, without worrying about the content of the second part.

# Lab Assignment

## The Task

In the second part of the assignment, you have to change your program to accommodate for the changes in the input data format.

Recall that the original `students.txt` file had the following format:

```
StLastName, StFirstName, Grade, Classroom, GPA, TLastName, TFirstName
```

Generally speaking, if each teacher teachers in exactly one classroom, it is a bit of a waste of space to put teacher's name against the name of every student. Therefore, we now revise the format of the input file. Now, the original `students.txt` is replaced with a pair of files: `list.txt` and `teachers.txt`.

The format of `list.txt` is

```
StLastName, StFirstName, Grade, Classroom, GPA
```

A sample line from `list.txt` is

```
DROP, SHERMAN, 0, 104, 3.25
```

("Sherman Drop is a kindergarden student assigned to classroom 104 whose GPA is 3.25.")

The format of `teachers.txt` is

```
TLastName, TFirstName, Classroom
```

A sample line from `teachers.txt` is

```
NIBLER,  JERLENE, 104
```

("Jerlene Nibler teaches in classroom 104.")

Your goal is to change the `schoolsearch` program you have developed for Part I of this assignment to handle the new input data formats. In addition, you are asked to design, and implement in the new program extra search facility.

## Specs

With the exception of the new functionality, described below, the new `schoolsearch` program shall have the same functionality as the `schoolsearch` program, working exactly the same way, i.e., it must handle the same command language and produce the same output.

The key difference is that now, instead of obtaining the data from a single file called `students.txt`, your program will read data from two files: `list.txt` and `teachers.txt`. Same assumptions about the location of the files (current directory) and error handling (minimal) apply.

### Additional Functionality

You are asked to design and implement additional search functionality. In particular, current language of search instructions for the program allows one to search for information about a student, given student's last name; list all students attending a class taught by a specified teacher; list all students in a specific grade and list all students taking a specific bus route.

Three new searches need to be added to the program:

- Given a classroom number, list all students assigned to it.
- Given a classroom number, find the teacher (or teachers) teaching in it.

- Given a range of GPAs, find all students/all students at a given grade level, whose GPA falls in the range[1]

You shall

- extend the language of search instructions to allow for these three types of searches to be specified by users;
- implement the functionality supporting each search.

### Implementation notes

Obviously, there are two ways to do this task. One way is to start from scratch and build a brand new program. The other way is to adapt the first program to the new data format. The decision of what to do is left up to individual teams.

### Testing and Deliverables

You have to submit your code, instructions on how to compile (if needed) and run your program, and a write-up.

The write-up shall contain the same information as the write-up for the first part of the assignment. In addition, I encourage each member of each team, write some additional comments about the assignment: what do you think is the purpose of the assignment? What have you learned?

The data files are available on-line. The direct URLs for the files (they won't be linked to the web page until April 2) are:

`http://www.csc.calpoly.edu/~dekhtyar/365-Spring2010/labs/lab1/list.txt`

`http://www.csc.calpoly.edu/~dekhtyar/365-Spring2010/labs/lab1/teachers.txt`

The information in these files is exactly the same as in the original `students.txt` file, so answers to test searches in both versions of your program should be the same.

Submit all your work (one submission per team) using `handin`:

```
handin dekhtyar lab01-2 <files>
```

**Please include the names of all team members in EACH submitted file.**

**Good Luck!**

[1] Treat both ends of the range inclusively.