CSC 336 (F14) Project 1: SQL queries over the Web

- **The deadline is 10/21/2014 mid-night** (two weeks from the time being assigned).
- The **weight** of this project is **15%** (out of 45%).

In this project we introduce one of the running examples of a relational database schema. The database schema consists of four relations, whose schemas are:
Product (maker, model, type)
PC (model, speed, ram, hd, price)
Laptop (model, speed, ram, hd, screen, price)
Printer (model, color, type, price)

The Product relation gives the manufacture, model number and type (PC, laptop, or printer) of various products. We assume for convenience that model numbers are unique over all manufactures and product types; that assumption is not realistic, and a real database would include a code for the manufacture as part of the model number. The PC relation gives for each model number that is a PC the speed (of the processor, in gigahertz), the amount of RAM (in megabytes), the size of the hard disk (in gigabytes), and the price. The Laptop relation is similar, except that the screen size (in inches) is also included. The Printer relation records for each printer model whether the printer produces color output (true, if so), the process type (laser or ink-jet, typically), and the price.

Part 1(20%): write the following declarations (**using SQL**) and make sure they work for your MySQL database. **DO NOT** use CHAR/VARCHAR for **all** attributes.
a) A suitable schema for relation product.
b) A suitable schema for relation PC.
c) A suitable schema for relation Laptop.
d) A suitable schema for elation Printer.

Part 2 (20%) follow the steps below to upload some data stored in CSV format to YOUR database.
Step 1: Download sample data at the following URLs. You can use "wget" linux command to get the data files, or, download them to your windows machine and then transfer to your work directory on your linux server. **The directory should be the one that you are using to connect to MySQL database server**.
http://134.74.112.65/CSc336/product.csv http://134.74.112.65/CSc336/pc.csv
http://134.74.112.65/CSc336/laptop.csv http://134.74.112.65/CSc336/printer.csv

Step 2: import these four CSV files into your databases using the following four commands **WITHIN MySQL console** (consult http://dev.mysql.com/doc/refman/5.5/en/load-data.html if you want to learn more). You may have to either change your table schemes or the data to successfully populate the tables, which is allowed.
1) LOAD DATA LOCAL INFILE 'product.csv' INTO TABLE product FIELDS TERMINATED BY ',';
2) LOAD DATA LOCAL INFILE 'pc.csv' INTO TABLE pc FIELDS TERMINATED BY ',';
3) LOAD DATA LOCAL INFILE 'printer.csv' INTO TABLE printer FIELDS TERMINATED BY ',';
4) LOAD DATA LOCAL INFILE 'laptop.csv' INTO TABLE laptop FIELDS TERMINATED BY ',';

Part 3 (40%) Write **SQL statements** for the following queries.
a) What PC models have a speed of at least 3.00?
b) Which manufactures make laptop with a hard disk of at the least 100GB?
c) Find the model number and price of all products (of any type) made by manufacture B.
d) Find distinct pairs of PC models with same CPU speed and RAM capacity.

Part 4 (20%)
Following the example in **proj0**, display the query results in your browser. You can choose to display the results in a single HTML page or in separate pages.

Bonus (5%) Continue on Part 3 and write a **SQL statement** for the following query:
Find those manufactures that sell Laptops, but not PCs.
Note: the solution would be simple if MySQL supports **Except** in SQL**.** However, it is known that we can use left outer join to simulate Except. Please consider use leaf outer join in developing your solution.

What to Submit: (1) MySQL SQL statements for part I, part III and the Bonus part (2) HTML files with embedded PHP programs for part 4. (3) A README file with your name, your database name and **URL(s) of for Part 4** for easy verification by the instructor (and/or his teaching assistant).
How to Submit: Please submit your project through **Blackboard** as a single **zipped** file.