450 Programming Project #3

Due Date: Saturday, October 30, 2010 (10pm)

Overview

Note: For this several solutions, you may need to install PHP on your personal machine, as the CS machines do not contain a command line version of PHP.

1. (15pts) Write a command line PHP program that reads exactly five numbers and prints them twice: once in ascending order and once in descending order. You should prompt the user for input, though the input will be guaranteed to be numeric – you do not need to do checking. For example, if the program receives 82, 0, 27, 9 and 3 as input then it should print:

```
Ascending order: 0 3 9 27 82
Descending order: 82 27 9 3 0
```

2. (15pts) Rot13 is an encryption method in which each of the 26 characters a-z is replaced by the character 13 places ahead or 13 places back in the alphabet. Write a command line program that reads text and outputs the rot13 equivalent. Do NOT use the built in PHP rot13 function Example:

```
Enter a text, line by line. Finish with an empty line.
> This text should be impossible to read
> because it has been encrypted with a fine
> encryption method.
>
Guvf grkg fubhyq or vzcbffvoyr gb ernq
orpnhfr vg unf orra rapelcgrq jvgu n svar
rapelcgvba zrgubq.
```

Note that since rot13 is symmetric, the same program can be used both for encoding and decoding.
Write a program that reads lines from standard input until end-of-file, then prints the number of lines, words and characters in the input, followed by the ROT13 encoding.

3. (25pts) Write a command line PHP program that prompts the user for items in a matrix. Each item in the row should be separated by a coma; each row is on a new line. The input is finalized with a blank line. Construct a matrix from this input and transpose the output. You should print the original array and resultant array using print_r. Example:

```
Enter a row: 1, 2, 3
Enter a row: 4, 5, 6
Enter a row: 7, 8, 9
Enter a row:

Input:
$input = array(
        0 => array(
                0 => '1',
                1 => '2',
                2 => '3'
        ),
        1 => array(
                0 => '4',
```

```
                        1 => '5',
                        2 => '6'
                ),
                0 => array(
                        0 => '7',
                        1 => '8',
                        2 => '9'
                )
        );

        Transposed Matrix:
        $output = array(
                0 => array(
                        0 => '1',
                        1 => '4',
                        2 => '7'
                ),
                2 => array(
                        0 => '2',
                        1 => '5',
                        2 => '8'
                ),
                3 => array(
                        0 => '3',
                        1 => '6',
                        2 => '9'
                )
        );
```

4. (45 pts) The Springfield Nuclear Power Plant accepts expense reports from its employees in electronic form. A typical expense report is shown below:
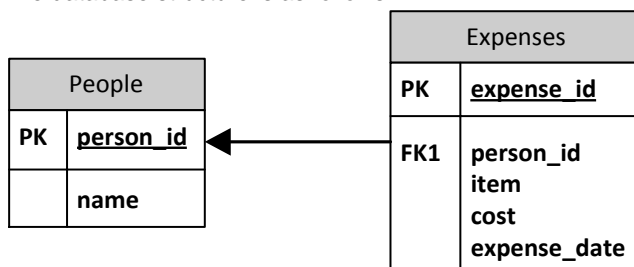
```
Name: Homer Simpson

Food, 10/1/2010: $10.00
Transportation, 10/1/2010: $25.00
Transportation, 10/3/2010: $25.00
Lodging, 10/1/2010: $150.00
Lodging, 10/2/2010: $150.00
Tip, 10/03/2010: $5.00
Food, 10/2/2010: $30.00
Entertainment, 10/04/2010: $80.00
```

Each line in the report starts with a word that is terminated by a , (coma), followed by a date, which is terminated by a : (colon). Exactly one line will start with Name that identifies the person who submitted the report. The remaining lines in the file identify the type, date, and amount of the expense. Blank lines can appear anywhere within the report and an expense type may appear more than once. If the file is malformed, inform the user to correct it.

You are to write a program that parses an expense file and populates a database with the information.

The database structure is as follows:

	Expenses	
PK	**expense_id**	

	People
PK	**person_id**
	name

	Expenses
PK	**expense_id**
FK1	**person_id** **item** **cost** **expense_date**

The database connection information is as follows:
Host: huckleberryroad.com
Username: hucklebe_plc
Password: 0WtMN@M}QABk

Database name: hucklebe_plc

Write a program that allows a user to upload their expense report in the format given above (and in the example files). You should check to make sure that the name of the person is not already in the database. If it is, you should use that existing ID to link the expenses to. If the name does not exist, you should insert a new row into the people table.

For each of the expenses, if there are expenses for that date with that name, you should prompt the user to if they want to overwrite the expenses, or add to them. If no records exist for that item and date, you should insert a new record.

The web page should also have the ability to run a report. I should be able to run a report by person name (all dates), date range (all people), or any combination of dates and people.

If a get a report of all people and all dates, the output should be similar to the following, though it need not be exact.

```
Expenses for 10/1/2010 to 10/15/2010

Homer Simpson: $300
Bart Simpson: $1000
Marge Simpson: $50
Waylon Smithers: $150
Comic Book Store Guy: $250


Bribe: $50
Chemicals: $25
Copying: $50
Entertainment: $80
Food: $80
Lodging: $450
Medical: $25
Pet Supplies: $25
Software: $800
Telephone: $75
Tip: $5
Transportation: $85


Total Expenses: $1750
```

You should host this project in your CS account, and provide source code with your submission as well as a link to the hosted version. You will be given an opportunity to attempt to break other people's projects by providing malformed input, bogus queries, or other such 'attacks'. To this end, your website MUST provide logging for all database updates, as database corruption by your project will be a significant loss of points. This log file needs to exist in the same directory as your hosted project and be named: plc.log, and be made publicly accessible.

You will be given 3 days after the due date to attempt to break other's projects. I will send out a link to all available sites shortly after the submission. If you find any flaws, you should email the professor and the per who's project was broken so that they may address the issues.

Style

Write clean, modular, well-structured, and well-documented code.

Here are some general guidelines:

1. Make sure that your name appears somewhere in each source file.
2. You do not have to document every single line of code you write. Provide enough documentation so someone who knows Lisp/Scheme can understand what your program is doing
3. Names should be indicative of their purpose.

Submitting Your Work

Please submit all PHP files in a single ZIP file to the appropriate myCourses dropbox. You should also include a readme with any design decisions made, as well as a link to your PHP hosted project.

The permissions on the DB are as follows

☑ SELECT   ☐ CREATE

☐ INSERT   ☐ ALTER

☑ UPDATE   ☐ DROP

☑ DELETE   ☐ LOCK TABLES

☑ INDEX   ☐ REFERENCES

☐ CREATE ROUTINE   ☐ ALTER ROUTINE

☐ CREATE VIEW   ☐ SHOW VIEW

☑ CREATE TEMPORARY TABLES   ☑ EXECUTE