COMP 10 - IDI
Assignment 4: Tables, HTML, loops, Convert
Due Wednesday February 25, 2009 11PM on Web and by Moodle

Introduction

This assignment will give you a chance to practice the material from lab04, make HTML tables, use convert to process images, and use shell scripts and loops.

Part 1: Making album1 into a Webpage

For Assignment 3, you stored a bunch of images and captions in the pictures/album1 directory below public_html. In lab04, you organized a set of images into three directories (big, small, and captions) and made a webpage that displayed the images and captions with clickable previews. For this part of this assignment, you will repeat part of what you did in lab04 but with two main additions: automation and a table.

Part (a): Automation

1. Write a shell script called setup_album in album1 that:
   a. Creates 3 subdirectories: big, small, captions
   b. chmods the three directories to be o+rx
   c. Moves the caption files into captions
   d. Makes 100x100 previews of the images and puts the previews in small
   e. Moves all the big images into big
   f. chmods all the image and caption files

2. chmod uo+rx setup_album

3. Now you can run the script to set up everything

Part (b): A Table

Write an HTML file in album1 called album.html that has the same basic format as the page you did in lab04 except for one important change: it uses an HTML table. In lab04, you used paragraphs to put the preview link and the caption on the same line. In this project, use a table and use table rows to put the preview link and caption on the same row. Using a table will ensure the images and captions are neatly organized into a grid.

Now browse your site. It should all be readable and the links should all work.

Part 2: Variations on a Theme

For this part, you will again practice using HTML tables and image tags. Furthermore, you will use convert to modify one image several ways.

The assignment is to modify one image nine ways and display all nine variations in a 3x3 table of images. For example, if the variation is rotation, this table:

shows the idea.

In particular:

1. Make a directory called variations1 under pictures.
2. Copy one of your images into that directory
3. Call the image big1.jpg
4. Use convert to make a 140x140 version of big1.jpg The small version must be called small1.jpg
5. Use convert to modify the image with:
   - convert -swirl 20 small1.jpg swirl20.jpg
   - convert -swirl 40 small1.jpg swirl40.jpg
   - convert -swirl 60 small1.jpg swirl60.jpg
   ...
   - convert -swirl 180 small1.jpg swirl180.jpg
6. Make all the swirl*.jpg images readable
7. Write a shell script called swirler that uses a loop to perform the operations described in steps 4, 5, and 6. chmod uo+rx swirler.
8. View the nine images from a browser.
9. Make a page called hw04-part2.html that has a header, a background of some solid color, and a 3x3 table that uses IMG tags to display all nine of the variations. These do not have to be links, they are only images in a table.
10. Make sure you can browse the page.

Part 3: Your Variations on a Theme

For this part, you will do the same thing as you did in Part 2, except, instead of using the swirl modification, you will use some other modification the convert program can do.

In particular:

1. Work in the variations1 directory under pictures
2. Copy one of your images into that directory

3. Call the image big2.jpg

4. Use convert to make a 140x140 version of big2.jpg
   The small version must be called small2.jpg

5. Try these four conversions:
   
   - convert -charcoal 10 small2.jpg mod1.jpg
   - convert -cycle 10 small2.jpg mod2.jpg
   - convert -edge 6 small1.jpg mod3.jpg
   - convert -noise 10 small1.jpg mod4.jpg
   
   chmod o+r mod*.jpg

6. View the results of these four operations.

7. Read convert.pdf on the hw04 webpage or browse:
   http://www.imagemagick.com/script/convert.php
   to learn more about convert and the operations. Experiment with operations until you find one you like. You will use this operations 9 times on one image to produce 9 increasingly modified versions of the same image.

8. Use convert to create nine variations on small2.jpg.
   All these variations must use the operation you picked. These variations will use the same original image and the same convert function. The only difference between the images is the value of the number that specifies how the function does its work.
   
   For example, the images can be created using the -edge function with edge factors of 2, 4, 6, 8 .... Or they could all be created with -cycle given values of 5, 10, 15, ....

9. Write a shell script called do_part3 that uses a loop to perform the operations described in steps 8.
   chmod uo+rx do_part3.

10. As you did in Part 2, create a page that contains a 3x3 table that displays all nine variations on the same image. Call this file hw04-part3.html.
    The top of the page must have a short paragraph that describes the image and explains how the 9 variations were generated.

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**Part 4: Two Variations : Nested Loop**

Consider this use of convert:

- convert -charcoal 2 -swirl 20 a.jpg a-2-20.jpg
- convert -charcoal 2 -swirl 40 a.jpg a-2-40.jpg
- convert -charcoal 2 -swirl 60 a.jpg a-2-60.jpg
- convert -charcoal 2 -swirl 80 a.jpg a-2-80.jpg
- convert -charcoal 4 -swirl 20 a.jpg a-4-20.jpg
- convert -charcoal 4 -swirl 40 a.jpg a-4-40.jpg
- ...
- convert -charcoal 8 -swirl 80 a.jpg a-8-80.jpg

This first command applies the charcoal operation to a.jpg, then applies the swirl operation to the result, then puts the result of these two operations into a file called a-2-20.jpg.

The next command does the same thing, except the amount of swirl is now 40. After doing four different swirls for a charcoal drawing with size 2, the next four commands do four swirls on a charcoal drawing with size 4, then with size 6, then with size 8.

With four sizes of charcoal and four amounts of swirl, these add up to sixteen commands. A lazier, more flexible way to do this is to write a nested loop using one convert command and some variables.

Write a shell script called do_part4 that uses a nested loop to produce sixteen 140x140 images. Instead of charcoal and swirl, use the operation you used for part 3 and another operation of your choice.

Then write an html file called hw04-part4.html that displays these sixteen images in a 4x4 table. For example, the placement of the sixteen images described above should go like:

<table>
<thead>
<tr>
<th>cc2</th>
<th>cc2</th>
<th>cc2</th>
<th>cc2</th>
</tr>
</thead>
<tbody>
<tr>
<td>swl20</td>
<td>swl40</td>
<td>swl60</td>
<td>swl80</td>
</tr>
<tr>
<td>cc4</td>
<td>cc4</td>
<td>cc4</td>
<td>cc4</td>
</tr>
<tr>
<td>swl20</td>
<td>swl40</td>
<td>swl60</td>
<td>swl80</td>
</tr>
<tr>
<td>cc6</td>
<td>cc6</td>
<td>cc6</td>
<td>cc6</td>
</tr>
<tr>
<td>swl20</td>
<td>swl40</td>
<td>swl60</td>
<td>swl80</td>
</tr>
<tr>
<td>cc8</td>
<td>cc8</td>
<td>cc8</td>
<td>cc8</td>
</tr>
<tr>
<td>swl20</td>
<td>swl40</td>
<td>swl60</td>
<td>swl80</td>
</tr>
</tbody>
</table>

In this table, swirl increases from left to right, and charcoal pencil width increases from top to bottom. Similarly, in your table, one modification will increase from left to right, and the other modification will increase from top to bottom.

Make sure your page is readable.

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**Turning in Your Work**

Your work will consist of four web pages and four scripts.

Put the four web pages and their scripts on your site in the directories specified in the questions above.

In addition, submit all four scripts using Moodle.