CMPSCI 105 Fall 2009
Quiz #3 Solution Key
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1. Which of the following file types must be transferred with FTP in ***binary mode*** and which must be transferred in ***ASCII mode***?

`.zip` `.gif` `.html` `.jpg` `.txt`

Answer: Files in the **`.zip`**, **`.gif`**, and **`.jpg`** formats are transferred in binary mode, and files in both **`.html`** and **`.txt`** are transferred in ASCII mode.

Discussion: The key here is to determine whether or not each file type can be edited in a text editor such as Windows Notepad. If a file can be edited in Notepad then it is text and must be transferred in ASCII mode to ensure that line-breaks get modified appropriately for the receiving system. Both **`.txt`** and **`.html`** files fit this description. If a file cannot be edited in Notepad then the file is an encoded binary file and must be transferred in binary mode to avoid any alterations. Nearly all file types (**`.gif`**, **`.jpg`**, **`.bmp`**, **`.zip`**, **`.doc`**, **`.pdf`**, **`.xls`**, etc.) must be transferred in binary mode to avoid having problems with characters that look like carriage-return or line-feed characters.

Scoring: 1 point. Assign the full point only if *all five* file types are labeled correctly. Remove ½ point for one, two, or three errors; remove full credit for four or five errors.

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2. I just logged into a remote anonymous FTP site. This site contains the file **`Bat.gif`** in a folder called **`images`**, which is inside the top-level folder called **`pub`**. Describe all steps needed to fetch the **`Bat.gif`** file.

Answer:

```
cd pub
cd images
binary
get Bat.gif
```

-or-

```
cd pub/images
binary
get Bat.gif
```

Discussion: Two things have to happen before we fetch the file: we must be in the correct subdirectory folder, and we must use the correct transfer mode.

To get into the correct folder requires that we change first into the **`pub`** folder, and then into the **`images`** folder. This can be done by using two separate **`cd`** commands as in the first solution, or it can be accomplished in one **`cd`** command with the folder names glued together by a forward slash. Either is acceptable.

To make certain we have the correct transfer mode, we use the **`binary`** command. Note that the **`binary`** command can come *before* we get into the **`pub/images`** folder; just so long as both occur before we attempt to fetch the file.

Scoring: 4 points. The first form is the expected answer from most students, but the second is also acceptable. Allow students to put the **`binary`** command at any point before the **`get`** command. Ignore any use of the **`dir`** or **`pwd`** commands, as they neither add to nor detract from the answer. Remove 1 point for each incorrect line. Remove 1 point overall for errors in formatting (such as using capital letters, using the backslash instead of the forward slash, etc.). Remove 1 point for including any other items, such as describing the anonymous log-in process, using the **`exit`** or **`quit`** commands, or including any traditional UNIX commands such as **`chmod`**.

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3. The UNIX file **`Bat.gif`** currently has the permissions **`-wx------`** which need to be set to **`r--r--r--`** instead. Show how to make the appropriate changes, using both the ***symbolic*** and ***absolute*** form of **`chmod`**.

Answer:

Symbolic: **`chmod u-wx,a+r Bat.gif`**
-or- **`chmod ugo-wx,ugo+r Bat.gif`**
-or- **`chmod ugo-wx+r Bat.gif`**
-or- **`chmod a-wx+r Bat.gif`**
-or- **`chmod a=r Bat.gif`**
-or- **`chmod u-w,u-x,u+r,g+r,o+r Bat.gif`**
-etc.-

Absolute: **`chmod 444 Bat.gif`**

Discussion: The symbolic form is more complicated than the absolute form for this problem because there are quite a number of changes that must be recorded. One approach is to line up the old permissions above the new permissions and include each difference in the **`chmod`** command in that order:

```
-wx------      old permissions
r--r--r--      new permissions
^^^^   ^       differences
```

In its fully expanded form, the changes for the user are **`u+r,u-w,u-x`**, for the group the changes are **`g+r`**, and for others the changes are **`o+r`**. This set of changes can be optimized in several ways, including gathering together as many of the changes from each triplet as possible (such as replacing **`u-w,u-x`** with **`u-wx`**), or by gathering together all changes to a particular type of permission (such as replacing **`u+r,g+r,o+r`** with either **`ugo+r`** or **`a+r`**). Any legal optimizations are acceptable. The mask **`a=r`** sets all three triplets to have read permission only (wiping out all other permissions), and so is also acceptable.

For the absolute form there is only the single correct answer. We do not care what the permissions are currently; we only care about what they will become. In the result, the pattern **`r--`** (which occurs in all three triplets) has the octal value **`4`**, so the final pattern is **`444`**.

Scoring: 4 points. Assign two points for the symbolic form and two points for the absolute form. In each case, assign one point total for the permissions masks, and one point total for all other parts of the command. Remove ½ point for minor errors in the permissions masks, and remove the full point if more than half of the mask is incorrect. Remove ½ point for each error in the command (such as forgetting the name of the file, capitalizing the **`chmod`** command, or for making mistakes in the case of the name **`Bat.gif`**), but do not remove more than 1 point total for this part. Accept any legal symbolic form.

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4. In Paint, how is the Bézier Curve tool similar to and different from the Line tool?

Answer: Both require that you click-drag from one end-point to the other end-point. With the Bézier curve you must then also click to set the two control points.

Discussion: When you click-drag from one end-point to the other, the line stretches like a rubber-band until you release the mouse. With the simple line, you are completely done at this time. The Bézier curve (the Curve tool in Paint), on the other hand, is still waiting for you to enter two control points that set the overall "wigglyness" of the curve. As you click or click-drag to set each control point, the curve will rubber-band to show the current shape. Note that in Paint there is no visual assistance given while you are doing this; you have to remember that the two control points are required.

Scoring: 1 point. Assign ½ point for the similarities, another ½ point for the differences.
