THE UNIVERSITY OF BRITISH COLUMBIA

Physics 210 Assignment # 2: Editors, bash & HTML

Tue. 14 Sep. 2010 — finish by Tue. 21 Sep.

Every workstation in Henn 205 has all the same accounts as the server `hyper.phas.ubc.ca`, to which you can log in remotely using `ssh` (which see). In the following, "`hyper`" denotes any of these computers; "`~`" refers to your `hyper` home directory (same as the environment variable `$HOME`), and all file and directory references are relative to that home directory. You will also be copying files owned by user `~phys210` (the course's home directory on `hyper`). *Be sure to read and follow all instructions carefully, as your grade will depend on certain files being in the right places with the right names. Remember, case matters!*

For the tasks below you will need a **plain text editor**. A few choices are `vi`, `pico`, `nano`, `gedit`, `kedit`, `nedit`, `emacs` or `xemacs`; pick one you like. There are others, but they all have the common feature that they display the raw ASCII characters in a file as you type in or delete or move or modify same. **DO NOT** try to use a *wysiwyg* ("what you see is what you get") application like *M$-Word* or any of the other "word processors" and "Web page editors". I want you to understand `HTML` (for example) as a simple typesetting language with a straightforward (if primitive) syntax. The *wysiwyg* applications insert lots of proprietary, encrypted or nonessential garbage; we will know if you use one, so don't!

As always, ask or e-mail me and/or the TAs right away if you encounter problems or don't understand something.

1. **SURVEY:** `Login` to your account on the P210 Website and click on "**Survey**" in the right column. You will be presented with an admittedly bewildering array of questions about what you know at the start of PHYS 210. Don't worry, we don't expect many experts! Just be careful to note that a "0" answer means, "I have no experience with this," as opposed to "evaluative scores" of 1 through 9, so don't enter "0" if you want to say, "I hate it!" We anticipate that almost no one will have ever heard of some of the Applications, so don't fret if you haven't. This survey will be given again later, to see if we have had any effect on your computing skills.

2. `.bashrc` Your default *shell* should be `bash`, the "Bourne Again SHell". There are other shells, like `tcsh`, that serve roughly the same purpose: to interpret command lines (or files full of command lines) and tell your computer what you want it to do. It starts automatically whenever you open a Terminal window, whose purpose is to give you a place to enter command lines.[1] When you open a Terminal window you should be "in `bash`". If for some reason you find yourself in another shell, you can invoke `bash` (*e.g.* from `tcsh`) as you might expect: with the command "`bash`". Your *shell* is a *program* that "runs" just like any other program; it interprets your keyboard entries until you `exit` (with the "`exit`" command), at which point it returns the responsibility for interpreting keyboard entries to the shell from which it was invoked — or, if it was invoked automatically, it will close the Terminal window.

   When `bash` starts up in your Terminal window, the first thing it does is read the instructions and commands stored in its own special *resource* `(rc)` *file*, `.bashrc`, that lives in your `$HOME` directory. If you have no `~/.bashrc` file, `bash` will use the system's default `/etc/bashrc` file, but, as Billy Holiday said, "*God bless the child who's got his own!*" So let's.

   I have provided an example `.bashrc` file in the `~phys210/` directory. First rename ("`mv`") any existing `.bashrc` file to `.bashrc-old` (or whatever makes it easy to remember, in case you decide not to use mine) and then copy ("`cp`") the example to your own `$HOME` directory. Edit `.bashrc` to suit your taste, using "`source .bashrc`" to re-read it and check the effects of your editing.

3. **ALIASES:** You can define an `alias` any time in `bash` with the command
   "`alias` <*newcommand*>`='` <`whatever you want` *newcommand* `to do`>`'`"
   but most aliases are usually defined in `.bashrc`, since this is done for you automatically every time you invoke `bash` in interactive mode. To keep `.bashrc` from getting too long and cluttered, it is recommended to separate out the `alias`es into a file of their own, called `.aliases`, which is `source`d (read in) by `.bashrc` as follows:[2]

   ```
   if [ -f ~/.aliases ]; then
     source ~/.aliases
   fi
   ```

   There are a few simple examples in the sample `.aliases` file provided in the `~phys210/` directory. These are either self-explanatory or easily decrypted, but they lead the way to greater convenience and power. The examples shown are typical in that their purpose is either to safeguard against careless booboos (like "`rm *`") or to provide a more mnemonic alternative to weird shell command names (like "`ls`") or to "bundle" a lot of frequently used "switches" (the letters following minus signs in a shell command) into one easily remembered personalized command. Basically, if you find you are always doing something the same way and you get tired of typing in the same details over and over, `alias` can be a big time-saver.

   The last example in `~phys210/.aliases` combines several commands into one, using a semicolon ("`;`")

[1] You may want to place a Terminal icon on your Taskbar, since you'll need to open a Terminal whenever you log in.

[2] This way `.bashrc` won't try to read it if it doesn't exist.

to string them together. You can also combine commands using "`&&`" or "`||`", with slightly different effects. Try "`man bash`" to learn more about the syntax of such combinations. Or, better yet, go to one of the friendlier `bash` manuals on the Web. Several are listed on our Website (see **Manuals** and **References**).

Finally, in your new `.aliases` file, *add a few aliases of your own* to "customize your shell" and make it more comfortable.[3]

When you have your `.bashrc` and `.aliases` files the way you want them, *carefully* enter the following commands:

```
mkdir /phys210/<you>/a02
ln -s ~/.bashrc /phys210/<you>/a02/
ln -s ~/.aliases /phys210/<you>/a02/
chmod -R o-r /phys210/<you>
chmod -R g+r /phys210/<you>
```

where "`<you>`" is your account name on `hyper`. *What does each of these commands do?* Write your explanations in the file
`/phys210/<you>/a02/readme.txt`
(Hint: the `chmod` commands[4] render the directory tree starting with `/phys210/<you>` inaccessible to others.[5]

4. **EDIT THE wiki:** Now that you have registered yourself on the PHYS 210 *wiki*, responded to the Email confirmation message and been approved by the Administrator, it is time to practice *editing* this "cooperative document" — first add your brief comment to the bottom of the page entitled, "`PHYS 210 ASSIGNMENT 2 (2010): wiki Editing`" (don't forget to end your entry with "`~~~~`" to ensure that you get credit for it!) and then go see if you have anything to add to the "`PHYS 210 CORE COMPETENCIES`" page. You are not required (or even encouraged) to change the latter page unless you feel an urge to do so, but you should read it and think about it.

5. **YOUR OWN PHYS 210 HOMEPAGE:** Create a subdirectory `public_html` in your `$HOME` directory on `hyper` where you can "publish" Web pages. It must be world-readable and -executable.[6] The Department's web server will serve up a file in that directory (*e.g.* `~jess/public_html/filename.html`) as a Web address[7]
`http://www.physics.ubc.ca/~jess/filename.html` to any Web browser. I'll refer to `~/public_html` as your Web directory. By default, a visitor to the directory `http://www.physics.ubc.ca/~jess` (with no `filename.html`) will be shown the contents of a file `index.html` (if it exists). To prevent others from browsing *all* the files in your Web directory, you'll want to create `index.html` there, even if it's empty. (To create an empty file, use "`touch index.html`".)

Feel free to use your Web directory for any purpose that does not violate UBC's guidelines for computer use (or waste the Department's resources and bandwidth frivolously). However, we need to reserve a subdirectory for material related to this course. For that purpose you need to "`mkdir ~/public_html/p210`" to create a subdirectory `p210` where we'll know to look for your work.

In that subdirectory, create a *non*-empty file `index.html` that displays your name, address, phone number *etc.* If you are unfamiliar with `HTML` syntax, don't worry; plain text with a few formatting commands like `<br>` ("break") for a new line and `<p>` for a paragraph will get you by. There are several simple manuals on our course Website if you get stuck. You won't be marked on the elegance or complexity of your new Web page, just on getting it set up and filled with the information specified in the **template file** at
`http://musr.physics.ubc.ca/p210/templates/index.html`
which you can copy into your own directory using the "`wget`" command (a very handy command indeed).[8]

Use the *plain text* editor of your choice to make the specified (in the template) changes to the template `index.html` file. Add a few suitably labelled links to other Web pages that relate to your favourite topic in Physics or Astronomy. Feel free to add other information if you wish.

Next, **log in** to our course Website and *Update your Profile* so that your *Work Web Page* points to your own new Homepage. Check your work by verifying that you can get to your Homepage by going to our Course Homepage, selecting "Student Pages" and then your name.

[3] This is sort of like hanging your own favourite art on the walls of a hotel room; you can hang your Picasso over the hotel's fluorescent puppies on black velvet and no one will mind, because this is just virtual reality! Similarly with your Desktop background. . . .

[4] To learn more about `chmod` (for example), see the manual! In Linux or Unix, that means entering the command "`man chmod`". You will want to try `chmod` out on some unimportant file (let's say `t.t`) and check with "`ls -al t.t`" to see the effect.

[5] Sharing ideas is encouraged; sharing results is forbidden, as you know. So the privacy of your homework directory is a matter of UBC policy, not just personal security.

[6] See the `chmod` command.

[7] "Web address" = `URL`, for `Uniform Resource Locator`.

[8] Note that you will get exactly the same result by directing your Web browser (or `wget`) to either of the `URL`s
`http://musr.physics.ubc.ca/p210/templates/index.html`
or `http://musr.physics.ubc.ca/p210/templates`
(illustrating the role of the *default* `index.html` file).