

UCF Physics: AST 5765/4762 (Advanced) Astronomical Data Analysis

Fall 2019 Homework 1

Pre-assignment Due Thursday 29 August 2019
Full Assignment Due Tuesday 3 September 2019

Work:

Install our software. Become sufficiently familiar with Linux to do the assignment. Play around until you are comfortable.

Resources:

<code>ast????-2019-syllabus-*.pdf</code>	The syllabus. Use the latest for your class.
<code>homework+coding.pdf</code>	Homework hand-in procedures and coding standards
<code>astrosociety.pdf</code>	Ad for the Astronomy Society.
<code>worklog.pdf</code>	How to keep a research log.
<code>sysmgt1-swinst.pdf</code>	Backgrounder for managing operating systems and software.
<code>virtualbox.pdf</code>	How to install VirtualBox (for Windows, mainly)
<code>ubuntu-software.pdf</code>	Setup instructions on Linux (incl. VirtualBox)
<code>mac-software.pdf</code>	Setup instructions on Mac
<code>bash_aliases</code>	Shell configuration file lines for everyone.
<code>mac-add-to-bash-inits</code>	Shell configuration file lines for Mac users.
<code>learnshell.pdf</code>	handout for online resources.
<code>fileorg.pdf</code>	A strategy for organizing your class files.
<code>emacs-tricks.txt</code>	Some nifty things you can only do in <code>emacs</code> (add more!).
<code>emacs-cheat-sheet</code>	Lots of <code>emacs</code> keystrokes and commands.

Problems to Hand In: Since we have not covered Python yet, the files to hand in are ordinary text files for this assignment, not `.py` program files. **Follow the file naming convention in the syllabus EXACTLY.**

Pre-assignment: (5 points, full credit if anything reasonable is handed in.) Install our software following the handouts for your OS, edit your answers into the survey, `tar` that up per the syllabus, and hand that in. This shows us that you have the course software and can hand in the homework in the right format. For this pre-assignment, late work will be accepted, and you can get help from others (course staff, other students, etc.) as much as you like to install the software and get the shell and editor working. You must edit the survey and hand in the work yourself, however. Try to do it before the second class, as we will have a help session in class.

1. (20 points) Install our Linux OS and data analysis software following the instructions for your operating system (don't worry, we use a virtual environment, so it won't change your existing files or OS). Everything in the course after this should be done in this environment, unless otherwise stated, including web searches, etc. Hand in a screen shot showing a terminal emulator window with a shell prompt. Name it `hw1_<username>_prob1_plot1.png`.

In the Linux shell:

2. (5 points) Make an account with your username (up to 8 letters or numbers, preferably 7 or fewer, **based on your name**). Set a good password. Include the command but not the

password you typed in your lab log. Note in the log that you typed a password by inserting that fact in parentheses at the right spot.

3. (5 points) In your home directory (which is called `~/`, below) make a directory named `~/ast5765/` or `~/ast4762/`, as appropriate. In that directory, make a file named `0-ast5765-<username>.log` or `0-ast4762-<username>.log`. This is your AST 5765/4762 lab log. Make a dated log entry giving all the commands to do the online items in the problems below. If you edit a file, make a comment saying what file you edited. At the end of the assignment, copy the log file and any other files needed for the assignment into your homework handin directory for this assignment (`~/ast5765/handin/hw1_<username>/`) **after** completing all other work on your assignment, including writing the final command. Also, be sure you have removed editor backup files (ending in `"~"`) and any files not called for in the assignment (such as an unedited version of the survey). Refer to the handout for the homework hand-in format.
4. For each of these, copy/paste the command and its output or describe the GUI process and its result in your log:
 - (a) (2 points) Start a web browser.
 - (b) (2 points) Start the emacs editor.
 - (c) (5 points) Make a directory called `ast5765` (or `ast4762`, as appropriate) in your home directory. Make a subdirectory `handin` in your class directory. Make a sub-subdirectory `hw1_<username>` in `~/ast5765/handin`. This is your "homework directory" for this assignment.
 - (d) (2 points) Download the file `Files/hw/hw1-survey` from WebCourses to your homework directory, renaming it `survey-<username>`.
 - (e) (5 points) Edit that file to contain your answers to the survey questions.
 - (f) (2 points) Copy your whole `handin` directory and all its contents to another name in one command. Use an option that preserves file dates and symbolic links and copies all subdirectories.
 - (g) (2 points) List your home directory.
 - (h) (2 points) Print your survey to the screen.
 - (i) (2 points) View your survey a page at a time.
 - (j) (2 points) Determine the nature of the contents of a file (e.g., FITS, PNG, JPEG, ASCII, etc.) without looking at it. Do not trust the extension.
 - (k) (2 points) Make and remove 2 directories in two total commands. For the removal, use a command that will not remove a directory that has files in it.
 - (l) (2 points) Move the copy of your `handin` directory to another name (do not move your `handin` directory, move the copy).
 - (m) (2 points) Copy and paste some text in your log with the mouse; explain what you did to do this.
 - (n) (2 points) View a PDF file from the class directory (give a shell command for doing this, don't just select it in a file browser).

- (o) (2 points) Make a compressed `tar` file, with extension `.tar.gz`, of your homework, following the instructions in the syllabus. Check that it contains the files you want to hand in. Copy-paste the listing into your log.
- (p) (2 points) Save and copy your log file into the homework directory after doing this assignment and recording everything needed in your log, including the `tar` command above. The directory should only contain the log file, screenshot, and filled-in survey, no other files.
- (q) (2 points) Rerun `run tar` to get the final log, and hand the `tar.gz` file in on Web-Courses.

Play with these until you are comfortable. See the handout for online resources.