

# CSCI 3294 (Seminar: UNIX Power Tools), Fall 2018

## Homework 8

Credit: 40 points.

### 1 Reading

Be sure you have read, or at least skimmed, the readings for 10/15.

### 2 Programming Problems

This isn't exactly a programming problem, but I want your files by e-mail so I can confirm that they work on a semi-standard Linux system.

Submit your file(s) by sending mail to [bmassing@cs.trinity.edu](mailto:bmassing@cs.trinity.edu) with each file as an attachment. Please use a subject line that mentions the course and the assignment (e.g., "csci 3294 hw 8" or "UNIX hw 8").

#### $\LaTeX$ and $\text{BIB}\TeX$

For this assignment your mission is to create a  $\LaTeX$  document (using the `article` class) that includes examples of a number of features. You will also write a simple bibliography file to be processed by  $\text{BIB}\TeX$ .

1. (5 points) Overall, your document should contain the following:
  - A title/author/date header with your name, the date you finish the assignment, and a title of your choice.
  - A section called "Basics" containing elements described in question 2
  - A section called "Figures and tables" containing elements described in question 3.
  - A section called "Honor code statement" containing the requested honor code statement.
  - A section called "Essay" containing the requested (possibly very short!) essay.
  - A bibliography, created using  $\text{BIB}\TeX$ , as described in problem 4.

Your document can also include anything else you think is interesting or might be fun to try to figure out how to do.

2. (10 points) The "Basics" section should include the following:
  - A bulleted or numbered list of some things you learned from the readings for this assignment and think you might find useful.
  - A bulleted or numbered list of some things you would like to be able to do in a document and don't (yet) know how to do with  $\LaTeX$ .
  - At least one example of not-totally-trivial math typesetting, set inline or displayed on a line by itself as in the "sampler" example. (If you choose the latter, it's up to you whether to use the `equation` environment to number it.) If no more-interesting examples occur to you, use the quadratic formula  $((-b \pm \sqrt{b^2 - 4ac}) / (2a))$ .

- At least one example of referencing a section using `\ref` (e.g., “my tables and plots are in Section N”, where N is whatever section they’re in), and at least one example of referencing something in your bibliography (described later). (Note that by default the bibliography section of the formatted document includes only items actually referenced. You can make it include all items with `\nocite{*}`.)
3. (15 points) The “Figures and tables” section should include the following:
- A table showing your schedule for this semester. Use the `tabular` environment to make the table and the `table` environment to make it a numbered floating table. Include a caption, and put something in your text referencing the table (e.g., “Table N shows my schedule for this semester”).  
It’s up to you what exactly should go in your table and how it should look, but if nothing else occurs to you, make a four-column table showing for each course its number and name, the instructor’s name, and meeting times.
  - A figure displaying program source for a short program, in whatever language you choose. Use the `figure` environment to make it a floating figure with a caption, and include something in your text referencing it (e.g., “Figure N shows a simple C program”). You can use `\verbatim` or `\verbatiminput` to typeset the code, or if you prefer you can figure out how to use a package (e.g., `listings`) that provides more sophisticated typesetting.
  - One or more graphical figures. It’s probably simplest just to use the two plots you created for Homework 7, but you can use anything you like. Use the `figure` environment to make each a floating figure, include a caption for each, and put something in your text referencing each of them. (e.g., “Figure Y shows plotting a formula with `gnuplot`”).  
If you use plots created with `gnuplot`, it’s up to you exactly how to incorporate the plots into your document; you could generate `.png` images and include them with `\includegraphics`, or you could generate combined `.tex` source and EPS as in one of the examples shown in class, or you might discover another option.  
Or you could investigate one of L<sup>A</sup>T<sub>E</sub>X’s figure-drawing environments, as mentioned in class. (If you decide to try TikZ, you should be able to find a manual for it online.)  
At least one of your figures, however, should be included using `\includegraphics`.
4. (10 points) Create a bibliography using BIB<sub>T</sub>E<sub>X</sub>, containing at least two different kinds of references. Simplest to do are probably books and Web sites, but if you’ve ever included other references in a bibliography for another course (e.g., a journal article), try including one of those as well. For books you could just pick one or more of the textbooks you’re using this semester, and for Web sites — well, you could use the one for this course or anything that appeals to you.

On all of the above, I will give extra points for anything that seems to go well beyond the minimum requirements.

If you find parts or all of this assignment very easy because you’ve used L<sup>A</sup>T<sub>E</sub>X before, try to go beyond what you’ve done previously.

You’re welcome to copy text from any of the examples on the class “sample programs” page, as long as you understand reasonably well what the copied lines do.

Turn in (by e-mail):

- Your  $\LaTeX$  source, in the form of one or more `.tex` files.
- Your bibliography “source”, in the form of a `.bib` file to be processed by `BIB $\TeX$` .
- Any other files needed to generate your document.
- A PDF version of your document.
- A plain-text `README.txt` file with the commands you used to generate the PDF version (including any commands needed to generate image or other files).

(*Note:* In class I may have mentioned that there are several IDE-like environments for  $\LaTeX$ . For this assignment, however, I recommend that you not use one of them; I think you will learn more by writing the  $\LaTeX$  source with a simple text editor.)

### 3 Honor Code Statement

Include the Honor Code pledge or just the word “pledged”, plus *at least one of the following* about collaboration and help (as many as apply).<sup>1</sup> Text *in italics* is explanatory or something for you to fill in. For programming assignments, this should go in the body of the e-mail or in a plain-text file `honor-code.txt` (no word-processor files please).

- This assignment is entirely my own work. (*Here, “entirely my own work” means that it’s your own work except for anything you got from the assignment itself — some programming assignments include “starter code”, for example — or from the course Web site. In particular, for programming assignments you can copy freely from anything on the “sample programs page”.*)
- I worked with *names of other students* on this assignment.
- I got help with this assignment from *source of help — ACM tutoring, another student in the course, the instructor, etc.* (*Here, “help” means significant help, beyond a little assistance with tools or compiler errors.*)
- I got help from *outside source — a book other than the textbook (give title and author), a Web site (give its URL), etc.* (*Here too, you only need to mention significant help — you don’t need to tell me that you looked up an error message on the Web, but if you found an algorithm or a code sketch, tell me about that.*)
- I provided help to *names of students* on this assignment. (*And here too, you only need to tell me about significant help.*)

### 4 Essay

Include a brief essay (a sentence or two is fine, though you can write as much as you like) telling me what about the assignment you found interesting, difficult, or otherwise noteworthy. For programming assignments, it should go in the body of the e-mail or in a plain-text file `essay.txt` (no word-processor files please).

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<sup>1</sup> Credit where credit is due: I based the wording of this list on a posting to a SIGCSE mailing list. SIGCSE is the ACM’s Special Interest Group on CS Education.