

In this homework, you will need to work on the eniac-l.seas.upenn.edu server. If you need help logging in to this machine see the following webpage: <http://www.seas.upenn.edu/cets/answers/remote.html> (note: you need to swap eniac-l.seas.upenn.edu for eniac.seas.upenn.edu).

You should write up this assignment using latex (doing the editing in emacs). In each question, you will be asked to write some code either in perl or latex. You should copy the code to the latex source file (after the appropriate question), adding formatting as necessary. Note, some characters (for example, '\$') will need to be handled specially.

When you are finished with the assignment, attach the latex source file (which should be compilable using the command 'pdflatex') to an email and send to [mcorniss@cis.upenn.edu](mailto:mcorniss@cis.upenn.edu). The subject of the email should be "cse399 - hw6" (without the quotes). The homework is due by the beginning of Monday's class. Total points: 50.

1. Preliminary.

- (a) Change your location to the 'cse399' directory you created in homework 1 (or create it again if you deleted it). Copy the directory /home1/m/mcorniss/teaching/cse399/hw6 and all its subcontents to your current location. Change your location to this new directory (hw6). In this directory, you will find files 'hw6.tex' and 'misc.tex'. Use these files to write up your homework in latex. Use the command 'pdflatex' to test your source file and to generate a pdf.

2. [30 Points] Perl.

- (a) Write a perl program called 'n-fact.pl'. 'n-fact.pl' should take as input a number  $n$  and output  $n!$  (i.e.,  $n * (n - 1) * (n - 2) * \dots * 2 * 1$ ).
- (b) Write a program 'sort-count.pl' that reads from standard input a list of numbers, sorts those numbers, and returns the total number of occurrences of each number (even if there are 0 occurrences). If the largest number is  $n$ , then 'sort-count.pl' will print out the occurrences for numbers 0 through  $n$ . For example, if the following was read from standard input:

```
2
1
2
5
2
```

Then 'sort-count.pl' would return:

```
1: 1
2: 3
3: 0
4: 0
5: 1
```

Your program should *not* use the perl *system* function.

- (c) Write the program 'get-sim-stat.sh' in perl. Your program should *not* use the perl *system* function.

3. [20 Points] Latex.

- (a) Write up homework 6 in latex, using the files 'hw6.tex' and 'misc.tex'. You should add a new macro to 'misc.tex' that produces an *et al.* whenever you use the command '\etal'.

(b) Reproduce the document in 'ex.pdf' using latex.

4. About this assignment.

(a) Approximately, how long did it take you to complete this homework?

(b) Would you classify this assignment as easy, straight-forward, or difficult?