

Please complete the following questions. If you need help, feel free to ask questions both from other students and from me. If you cannot finish during the class time then you should finish this lab at home. After you finish, feel free to clean up (*i.e.*, remove) any files or directories that were created, you won't need them in the future. But be careful not to remove any other important files you may have in your home directory.

1. Perl.

- (a) Write a program in perl that takes multiple lines of input from stdin and outputs those lines sorted lexicographically. You can use a simple sorting algorithm like bubblesort. In your script you should define one subroutine *swap* that takes as input two indices of an array and swaps those entries in the array. All variables used within the subroutine must be local to that subroutine.

Answer:

```
#!/usr/bin/perl

sub swap {
    my $index1 = shift(@_);
    my $index2 = shift(@_);
    local($temp);
    $temp = @input[$index1];
    @input[$index1] = @input[$index2];
    @input[$index2] = $temp;
}

open FH, "-";
@input = <FH>;

for ($i = 0; $i < scalar(@input); $i++) {
    for ($j = $i+1; $j < scalar(@input); $j++) {
        if (@input[$i] gt @input[$j]) {
            swap($i, $j);
        }
    }
}

for ($i = 0; $i < scalar(@input); $i++) {
    print "@input[$i]";
}

exit 0;
```

2. Latex.

- (a) Construct a latex document of type article from scratch. Add a table, bulleted list, and numbered list to your document. Finally, reproduce the equations below. After you are finished, compile your latex file and make a pdf file.

Equations:
$$\alpha = \beta_1^n + \beta_2^y$$

$$\mu = X \cup Y$$

$$x = \frac{y+z}{w}$$

Answer:

```

\documentclass{article}
\begin{document}

\begin{tabular}{|c|c|}\hline
1 & 2\\\hline
3 & 4\\\hline
5 & 6\\\hline
\end{tabular}

\begin{enumerate}
\item A
\item B
\item C
\end{enumerate}

$\alpha = \beta^{\{n\}_{1}} + \beta^{\{\gamma\}_{2}}$\

$\mu = X \cup Y$\

$x = \frac{y+z}{w}$

\end{document}

```

3. Other applications.

- (a) OpenOffice is a nice application for working with text documents, spreadsheets, and presentations. It is similar to Microsoft Office (Word, Excel, and PowerPoint) and, in fact, can work with Microsoft Office documents. There is an icon for OpenOffice in the top right of your desktop. Find the icon, open OpenOffice, and begin editing a new text document.
- (b) KDE, the linux desktop environment that runs by default on the SEAS linux machines, has a nice gui menu, which can be used to find all kinds of applications. The menu is similar to the start menu on windows machines. It is located in the lower left corner of the desktop. Use it to find the application XMMS, a music program for playing mp3 files.
- (c) Use the KDE menu to find the control center and open it. The control center can be used to customize your desktop. For example, you can use the control center to change your background. Any changes you make will be visible on any SEAS linux machine.
- (d) Located near the bottom right of the desktop is a web browser icon. This icon launches Konqueror, the default web browser (similar to internet explorer) in KDE. Open Konqueror.
- (e) Another popular web browser is FireFox. Use the KDE menu to find and open FireFox. FireFox can also run on Windows and Apple machines. To download it (for free) google "download firefox". The first link you should take you to the download site.
- (f) Thunderbird, which is developed by the same group that develops FireFox, is a nice application for viewing email. Use the KDE menu to find and launch Thunderbird. To use Thunderbird, you will need to do some configuration. CETS has a page describing how to do this:
<http://www.seas.upenn.edu/cets/answers/multimailconfig-thunderbird.html>.