Student Computing Guide
Department of Statistics
Rice University
(ver 3.0)

helpdesk@stat.rice.edu

2004-2005 School Year

Contents

Chapter 1

Introduction

Welcome to the Student Computing Guide! This guide to computing at Statistics Department, Rice University is based on a guide created by many previous and current graduate students and faculty, with the need of incoming students in mind. It is meant to give new students a clear view of the computing facilities that Rice has to offer and how to make maximum use of them. It also gives introductions to various software and accommodations about how to use them.

Chapter two summarizes the computing facilities on campus and how to access them. This is most useful to new students and the summary table given in the last section can be used as a checklist. The following chapters covers several aspects of our daily computing tasks including printing, email, web pages, computation, word processing and remote access. Although there are many ways to do the same thing and the choice of software can be very personal, most commonly used software are introduced and basic information about how to obtain, set up and use them are given. Whenever possible, further references, mostly URLs, are given so that you can make use of guides for specific topics from many other resources. If you need more information, 'googling' the keywords will usually give you what you need.

You will notice that this guide covers more Unix software than windows. This is partly because there is less software for windows than for Unix (for statistics use), also because windows software is easier to use thus needs less introduction, while Unix applications, though more powerful and more flexible, have steeper learning curves.

This guide is under constant maintenance and any contribution will be highly appreciated. The newest HTML version of it will be put under the helpdesk `http://www.stat.rice.edu/~helpdesk/compguide`. Printer friendly (unfriendly to trees :-) versions are in one-page HTML `http://www.stat.rice.edu/~helpdesk/compguide/compguide-single.html`, postscript `http://www.stat.rice.edu/~helpdesk/compguide/compguide.ps` and pdf `http://www.stat.rice.edu/~helpdesk/compguide/compguide.pdf` format.

Chapter 2

Computer Equipment and Accounts

2.1 The Big Picture

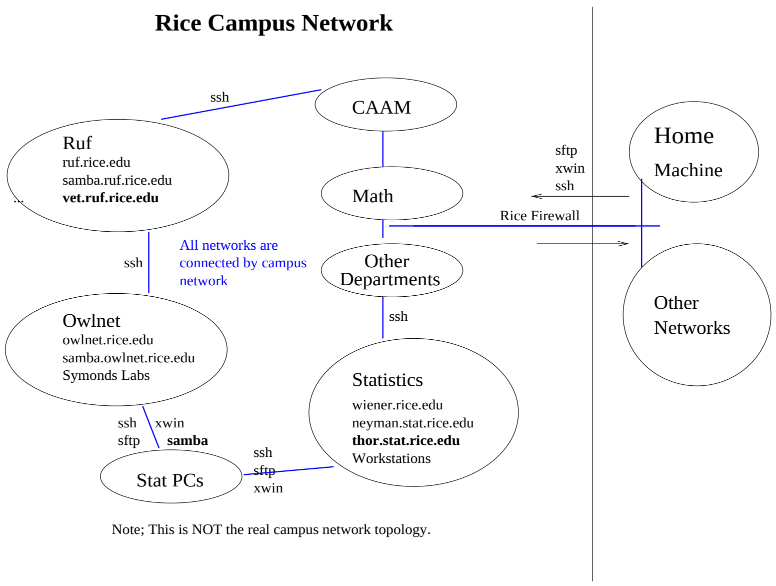

Figure 1: Campus Networks (Unix)

Computing at Rice is composed of many networks which are independent of each other. As you can see from figure 1, there are two big campus-wide networks (**owlnet** and **ruf**) and many smaller departmental networks such as math, caam and stat. They are independent in the sense that you frequently only have an account on one or maybe two or three networks, and that you cannot access software on other networks unless you have an account there. There are many public labs that belong to different networks. You need to know which network they belong to and have appropriate accounts to use them. Graduate students in the statistics department usually have accounts on owlnet, ruf and stat networks. What makes things more complicated is that there are usually separate windows/samba accounts for each network.

Most of the servers run a Unix based OS, so being able to use Unix commands is imperative. Computers on the network come in several types: terminals (no brain, only connects to servers), servers (Unix), and workstations (some PC, some Mac, some Linux, some Unix).

If you use a Linux/Unix workstation, all of your files will be stored on the network automatically and backed up by the system administrator regularly. Thus in Unix, you can log in at any computer in your network, and your files will be there, and most of the time your display settings will be the same. Similarly, all programs on the network are 'shared', in a similar sort of way- you can log in to any Unix machine, and the same programs will be available.

However, Unix-based workstations are in general considerably more expensive than PCs, and often less-powerful. Because of this, the department has deployed more windows desktops than workstations. If you prefer a Unix system, you will have to inform Diane (diane@stat.rice.edu) in advance.

If you are using a windows PC, your files will generally be accessible only to your computer. To store your files to the servers, you will have to use samba (like the 'u' drive in the PCs in Symonds Lab II, which is mapped to your owlnet home directory), ftp, secure-FTP or even emails. If you want to use software on the Unix servers, you need programs called `X-win` or/and `SSH` . Basically, `SSH` allows you to log in to Unix servers and run text based commands or software while `X-win` let you run X-based (graphics user interface) applications. Slava has a nice article about the usage of ssh/x-win at the how-to section of helpdesk website.

2.2 Statistics Network and your desktop

The Statistics network is composed of the computers in the offices of faculty, staff and students, as well as the main stat servers (neyman, thor etc.) which are located in the basement. This is our home field. **thor.stat.rice.edu** is the preferred server for computation while two other servers **neyman.stat.rice.edu**, **wiener.stat.rice.edu** can also be used, the mail server is stat.rice.edu.

You can apply for a stat account AFTER you get an owlnet or RUF account. This is because Owlnet/RUF are bigger networks and a unique user name on stat network might not be unique on Owlnet/RUF ...... and you do not want to have two different user names at Rice. When you check in, Diane `mailto:dbrown@rice.edu` will give you an application form and your account will be created soon after you fill it out. (Both Ruf and Stat accounts, as well as stat windows account (engineering account) have been created before orientation this year, thanks should go to Diane, Leticia and our IT friends.)

After logging in for the first time, you should be faced with some sort of prompt/command line, at which you can type things like 'pine' to check your mail, 'ls' to list your files, or one of the other common ones. If you are not at all familiar with Unix system, Blair's UNIX Command List `http://www.owlnet.rice.edu/~blairc/stat/tips/unix` can help you get started and books like *Kernighan*'s "UNIX programming Environment" are handy to keep on your desk. Helpdesk FAQ list `http://www.stat.rice.edu/~helpdesk/` also provides answers to some basic configuration problems.

You will have a desktop in your office. Before you have your own desktop, you can use the PCs and Linux Workstations in room DH2093. Your desktop can be either a PC or a Unix workstation. If you have a strong preference, tell Diane and the department will try to accommodate your need, although your request is not guaranteed.

If your desktop is a Unix workstation, it will be directly connected to the stat network and your home directory on stat servers will be your local home directory. If you have a PC, as I have mentioned, you will have to `sftp` your files back and forth from the servers if you are interested in using the same files in Unix and windows. Anyway, you can also make use of your PC's local hard drive. It seems that your local hard drive is quicker and sometimes more spacious but please keep in mind that PC's are not backed up and you are under the risk of losing everything in your PC. Keeping your important files on Unix is a good practice.

Your desktop is maintained by Rice IT department. You will usually not be given administration or root privilege so your ability to reconfigure your machine, including install/uninstall certain software, add/remove services, is limited. If you need some specific software, you can either try to install them yourself or submit a problem to http://problem.rice.edu.

If you are working on a linux or Unix machine that is slow, or if you have a large program you want to run, it might be wise to use a much quicker computer, like `thor.stat.rice.edu`. You can also make use of servers on RUF or Owlnet such as `jungle.owlnet.rice.edu`, among which `vet.ruf.rice.edu` is a preferred statistics computing server.

2.3 Owlnet, Symonds II Lab, Ruf and Vet

All stat grad students are entitled to an owlnet account, a ruf account and a stat account. To open an owlnet or ruf account, go to Rice Online Applicaiton System `http://apply.rice.edu` and follow the instructions. (If you are new to Rice and can not access any computer, go to the Mud Building and you can apply your accounts there.) It's nice to have an owlnet or ruf account for various reasons, including easy web page hosting, ability to use computers in campus labs like Symonds II Lab (Owlnet), a backup in case there are troubles on the stat network, because you have access to different MATLAB toolboxes/licenses, etc. It is also convenient to have an owlnet account if you want to use the computers around campus at the assorted labs or in the library (you can then use 'ssh' to access your stat account from owlnet). However, on an owlnet account, you only have a fixed amount of disk space to use (which changes every year. I believe that current limit is 500M), on a RUF account it's also fixed, while on your stat account, there is currently not a fixed quota. It is possible to increase your quotas on owlnet or ruf by logging a problem.

Symonds II lab (bottom of Duncan Hall, by the Dean's office) is part of the owlnet network. To use these computers you need to create an owlnet account. However, these computers are PC's and the main owlnet servers are Unix. In order for them to communicate, you need to get a Samba `http://www.samba.org` or printing password. This is now done by visiting owlnet webpage `http://www.owlnet.rice.edu`, and clicking on 'Change Your PC/Mac Password'. This is the same password used to log onto PC machines in the library, and will let you print from PC and Macs on owlnet around campus (although you will be billed for your printing on owlnet).

Campus IT people want grad students to use a RUF account (intended for faculty, staff, grad students) instead of an owlnet account (intended for undergrad course work). Having a RUF account is in many ways analogous to having an owlnet account - both can check their email online at Rice webmail page `http://webmail.rice.edu` (refer to chapter four) and both have quotas. Although I'm not too sure about the differences - Owlnet provides certain software (MATLAB, S-plus, etc) that isn't available on RUF. To apply for a RUF account, visit Rice Online Application System `http://apply.rice.edu` again.

Vet is the statistical computer server for RUF. It is primarily used by faculty and grad students for large, statistical processing. It has stat software installed, including SPSS, SAS, GAUSS and SPLUS. Now, to get access a VET account, you must have a RUF account. After your have RUF account, apply for a Vet account by logging your request via IT problem webpage `http://problem.rice.edu`.

2.4 Engineering Account and VPN Account

An engineering account is a windows NT account for all engineering graduate students. Most people in the stat department apply for an engineering account so that they can print to dh2088, dh2093 from their PC. (As a matter of fact, you can print from your PC without an Engineering account, but this can not be done without administrative privilege.) To apply for an engineering account, submit a problem via IT problem webpage `http://problem.rice.edu`. (For 2004 new students, enginerring accounts have been created).

Many Rice web services, such as the IT problem webpage `http://problem.rice.edu`, the IT software page `http://software.is.rice.edu`, and the registrar's office `http://sisweb.rice.edu` are only accessible from within Rice network. That is to say, you can not use these services at home or when you are off campus. The VPN (Virtual Private Network) allows secure transporting of data between Rice University and a remote user connected to the Internet outside of Rice, and thus allows remote users access to Rice resources just like they do in their offices. To use the VPN, you need to have a VPN account and VPN client software which can be downloaded from the Rice VPN homepage `http://www.rice.edu/Computer/Dialup/`

vpn/index.html. You must request a VPN account via the Problem tracking system by simply stating "VPN account request." When your account is ready, you will receive an email reply asking you to bring a photo ID to the office of the VPN administrator to pick up your VPN password. Please refer to the remote access chapter for more details.

2.5 Your Laptop and the Wireless Network

If you have a laptop, you can either apply for a static IP address (if your office has a free network port or you can bring in a router or ethernet hub) or make use the wireless network. Duncan Hall is proud to be one of the first buildings at Rice to provide a wireless network. To use the wireless network, your laptop must have a wireless network card. Some new models of laptops have build-in wireless card. If your laptop does not have one, you can buy a PCMICA wireless network card under $50. All you need to do is follow the instructions of Rice Wireless Network Project http://www.rice.edu/IT/network/wireless/index.html to register your card and then enjoy the freedom of wireless networking.

2.6 Working at home

You can use ssh/x-win to connect to Rice networks. A VPN account is needed in many cases. For windows users, the remote desktop feature of windows XP professional is a nice tool to use. (See Slava's article about this in the how-to section.). You may also want to try VNC, which is platform independent and has some good features. For example, under Linux, you can have several VNC server sessions which are all independent virtual desktops.

2.7 A Summary Table

Table 2.7 is a summary table of accounts, new students can use this as a check list.

Note:

1. See RUF FAQ page http://www.ruf.rice.edu/FAQ/cache/161.html for details.

2. Need a RUF account.
3. Need a RUF or Owlnet account.
4. You can use command '`passwd -r nis -e`' to change your login shell.

Table 2.7: Summary of Accounts

Account	purpose	how to apply	how to change password
RUF Unix	access ruf	http://apply.rice.edu	`passwd`
RUF Samba	access files on ruf through samba	Use command '`pcpasswd`' [1]	`pcpasswd`
RUF Vet	statistics computing	submit a problem[2]	same password as Ruf.
Owlnet Unix	access owlnet	http://apply.rice.edu	`passwd -r nis`
Owlnet Windows	Symond Lab	http://www.owlnet.rice.edu	use the same web page
Stat	access stat	see Diane[3]	`passwd -r nis`[4]
Engineering	print from PC	submit a problem	
VPN	access rice service from outside	submit a problem	submit a problem

Chapter 3

Printing

3.1 Printer Setup

We have several printers - at least one in each of the 2nd floor hallways, room 2088 and room 2093. There is a color printer in dh2093 as well. In Unix, the name of these printers are: dh2088, dh2088-duplex, dh2093, dh2093-duplex and dh2093c. dh2088 and dh2088-duplex refer to the same printer but dh2088-duplex will print in duplex mode. (front and back printing, which saves paper.)

You can invoke these printers by typing commands like:

```
lpr -Pdh2093 report.ps
lpr -Pdh2088-duplex file.txt
```

where -P option is used to specify which printer to print. Note that you can only use lpr command print postscript (ps) file or plain text file such as S-Plus source code. Sending a .pdf or .jpg file directly to the printer will generate hundreds of pages of trash printouts.

You can also specify a default printer so that you do not have to use -P option all the time. To do this, just add the following two lines to your .cshrc[1] file:

[1] if you are using another shell, such as bsh, ksh, you need to modify different resource file and use different grammar. For example, in bsh (or bash), the grammar is

```
export PRINTER=dh2088-duplex
export LPDEST=dh2088-duplex
```

```
setenv PRINTER dh2088-duplex
setenv LPDEST dh2088-duplex
```

If you have a windows PC, the easiest way to set up your printer is to apply for an engineering account and then click `start -> Run` and type in one or some of the following commands:

```
\\engrpdc\dh2093
\\engrpdc\dh2093d
\\engrpdc\dh2088
\\engrpdc\dh2088d
\\engrpdc\dh2093c
```

If you set up multiple printers, you can right-click one of them and choose `set as default printer` to set it as your default printer.

If you have a laptop (Windows or Linux) or a self-maintained desktop, you will have to do more to set up your printer. The terminology involved here are printer server and LPR port. The most important thing to remember here is that you have to use "generic postscript" printer driver to print to the LPR port.

If you are using Linux, you will most possibly use `CUPS` printing system. Please refer to the CUPS help of your Linux distribution and use the following parameters when requested:

printer server: `dh2088(or dh2093)-server.stat.rice.edu`
queue name: `dh2088, dh2088-duplex, dh2093 or dh2093-duplex`
printer: `generic PS printer.`

If you are using Windows system, you can either apply for an engineering account or use Windows LPR ports. Windows help system gives derailed description about how to set up a LPR port (`Start -> Help -> Index ->` search `LPR port, print service for Unix`) and here is how to do it under windows 2000:

1. Go to Adobe website `http://www.adobe.com`, search for printer driver, download "Generic Postscript Driver"

2. `Start -> Control Panel -> Network and Dial-up Connections -> Advanced -> Optional Networking Components`. Select `Other network file and Print Services` and press `OK`. You will probably need win2k installation CD.

3. Install the "generic postscript driver" and set up your printer. When prompted for a printing port, choose LPR port and use the parameters above.

There is a more detailed description about windows printing in the how-to section of helpdesk website.

3.2 How to Print (PDF, PS, etc.)

It is pretty easy to print in windows, you only need to choose 'print' from the 'file' menu in any application. You can use Adobe Acroread to open and print PDF file, use GSview to open and print PS file, use notepad or wordpad to open and print any text file, ... This is almost also true in Unix, you can use acroread to open and print PDF file, gv command to open and print ps file, Netscape to print web pages. However, most applications under Unix provide command line options so that you can print directly from a command line. There are some Unix applications that can yield better printouts or help you save time or trees.

3.2.1 Acroread

DO NOT send pdf files directly to the printer with the `lpr` command. Use `acroread` to open it and print. If you do want to use a command line try:

```
acroread -toPostscript file.pdf | lpr
```

This trick can also serves as a `pdf->ps` converter. (Use `acroread -toPostscript file.pdf > file.ps`). Note that there are two commands: `pdf2ps` and `ps2pdf` to convert between ps and pdf formats, though `ps2pdf` produces a poor quality pdf file.

In case that you are running Linux, the default PDF viewer is xpdf. You can print with

```
xpdf file.pdf -ps | lpr
```

command and you might also have a command named `pdf2ps` to convert pdf files to ps format.

3.2.2 Gv and Ghostview

gv and ghostview are used to display (and print, though you can use lpr command directly) postscript files. ghostview has not been under development for a while and gv is preferred because of its friendier user interface and ability to open pdf files. This is why the system administrator of stat network maps ghostview to gv so both gv and ghostview command will bring up gv.

However, some students do notice that some ps file can be bettered rendered by 'real' ghostview. If this is the case, you can use ghostview by its full path name by typing:

```
/usr/site/ghostview/bin/ghostview
```

You can also make an alias for this command. If you do not know how to use alias, you have missed a powerful tool to simplify your Unix life. I would suggest that you learn it along with other shell functions such as command line completion, command history. The tutorials at helpdesk `http://www.stat.rice.edu/~helpdesk` should provide sufficient information to get started, if not there are plenty of UNIX guides on the web that can be googled.

3.2.3 Enscript

Enscript is a tool to convert plain text file to postscript file or send it directly to printer. Although printers accept plain text input, if will use a text mode that only prints 40-50 lines with a huge ugly font. Enscript can use better fonts and can print in several columns or even emphasize keywords according to the contend of the text file.

Enscript has many options and the best way to learn them is through examples. For example:

```
enscript -Ehtml -2 -r index.html
```

print index.html in two columns (`-2`), in landscape mode (`-r`), with proper keywords highlighted (`-Ehtml`, tell `enscript` to use html style). O'Reilly network has an excellent introductory article `http://linux.oreillynet.com/`

lpt/a//linux/2000/04/04/living/text.html about enscript. A more straightforward way to find meanings of options is 'man enscript'[2].

You can incorporate enscript to many of your favorite Unix applications. For example, you can set up mutt (a powerful mail client) to print with enscript by adding:

```
set print_command="enscript -Email -2 -r -G"
```

to your .muttrc file. This will print your emails in two columns, in landscape mode, with fancy header and highlighted email headers. Similarly, you can follow the following steps to use enscript in pine (a very popular text based mail client).

1. In the `MAIN MENU` choose `SETUP` then `Printer`.
2. Go to `Personally selected print command` and hit `A`.
3. At the question `Enter printer name:` answer, for example, `dh2088`.
4. At the question `Enter command for printer :` answer, for example, `enscript -Email -G -2r`.
5. Hit `E` to exit and `y` to confirm.

3.2.4 Other Options: Psnup, Latex

Enscript can only deal with plain text file. To save space and paper, you can change any postscript file to print two pages to one page. This can be done by the following command:

```
psnup -2 original.ps new.ps
```

In LaTeX, you can set things up directly:

```
\documentclass[psfig]{seminar} \twoup
```

should print the slides two to a page. There are sets of formatting macros (.sty files) for use with TeX and LaTeX that make things simpler, and some that adhere to university guidelines for text (ie, thesis) preparation are available.

[2]Because stat network frequently has many versions of the same application, '`man yourcommand`' sometimes can not find the correct entry. Use '`siteman yourcommand`' in this case.

3.3 Printer problems

The printer(s) occasionally malfunction. Check the things you print soon after you have sent them to the printer. This can be done using lpq command

```
lpq -P dh2088
```

This will save much time and headaches. Do not go home or off somewhere for several hours without checking! Be very careful about what you send to the printer. Sending the compiled form of a program to the printer can cause it to spew gibberish for many dozens of pages.

If the result of your lpq command is something like

```
stalled (2222sec) 234 a-huge-pdf-file.pdf
```

you are in trouble. DO NOT simply reset the printer. In most of the cases, printing jobs will remain after you reset the printer, and will still be stalled. You can try to remove your own stalled printing job with `lprm` command. For example, if job 234 is stalled on dh2088, log on to thor and fire command:

```
lprm -d dh2088 234
```

If `lprm` does not work or the stalled printing job belongs to someone else, you should report the problem and use another printer instead. During normal office hours, you can submit a problem through Rice Problem Tracking System `http://problem.rice.edu`. At night or during the weekend, you can send an email to helpdesk `mailto:helpdesk@stat.rice.edu`, who can remove stalled printing jobs if he is available.

Chapter 4

Email

4.1 Email Accounts and Mail Home

For whatever campus network that you have an account on, you also have an email account on that server. That is to say, you can have several email addresses like you@stat.rice.edu, you@ruf.rice.edu, you@owlnet.rice.edu and you@rice.edu which is an alias to your RUF or owlnet email address.

Fortunately, you do not have to check emails from all these accounts. At Rice, all your emails will be automatically delivered to one of your mail accounts at your choice[1]. This account is called your '**mail home**'. By default, you mail home is `stat.rice.edu` but if you prefer another account, you can submit a request form to change your mail home at `http://problem.rice.edu`.

4.2 Email Protocols and Clients

There are several ways that you can manage your email and there are many popular email clients that you can choose from. Choosing the right way to deal with your email actually depends on how many emails you receive everyday and how you want to access your email. The first question you will face is: Where do you want to store your email?

You have two choices: on server or on your local hard drive, usually your PC's local hard drive. If you have a Unix workstation, you do not have to

[1]Many of you know how to use a .forward file to do this. Please do not use a .forward file unless you have consulted the system administrator. Your own .forward file might cause a mail loop.

worry about this. However, if you have a windows machine, downloading emails to your local mailbox through POP3 protocol is tempting. It is easier and faster and you can read your emails offline (without having to connect to the server.) The major problem of this is that you can only access your email through your PC.

Where you store your email determines how you can access your email. You have several options:

- downloading mail to your PC through POP3 protocol. All windows mail clients can do this.

- log on to stat servers and use a text based (pine, elm or mutt) or X-based (dtmail, Netscape) mail client to manage your emails. These mail client will manipulate your mailbox directly or use 'move mail' to move your emails to their own mailboxes.

- use IMAP protocol to access your emails from a remote machine. All major windows and Unix mail clients support this method. If you have many big mailboxes, IMAP connection can be very slow.

Even if you manage your emails mostly under Unix, you might still need to use windows mail clients to open some windows-specific attachments. Many of the grad students and faculty in stat department use a combination of the latter two methods mentioned above.

Table 4.2 lists mail servers that you can use:

Table 4.2: Mail Servers

account	pop3 server	imap server	smtp server
stat	`stat.rice.edu`	`stat.rice.edu`	`stat.rice.edu`
ruf	`pop.ruf.rice.edu`	`imap.ruf.rice.edu`	`rice.edu`
owlnet	`owlnet.rice.edu`	`imap.owlnet.rice.edu`	`rice.edu`

4.2.1 Windows Mail Clients: Outlook and Outlook Express

Outlook and Outlook Express (OE) are the most popular mail clients under windows. Other options include Netscape, Mozilla and Eudora. Outlook Express (as part of Internet explorer) is bundled with all versions of windows operating systems and Outlook is part of office suite. Techniquely, OE is the simplified outlook since outlook have all functionality of OE and can also take care of task list, notes, journal etc. The following discussions apply to both OE and Outlook.

To add an account under OE, go to `Tools -> Accounts -> Mail -> Add -> Mail...`. An Internet connection wizard will lead you through the procedure. Be careful of the difference between POP3 and IMAP account. All pop3 accounts will put emails in the same local inbox and an imap account will add another account on the left panel.

Because IMAP account manipulates mailboxes on the remote server, you need to specify the folder under which you store your email. This folder is usually 'Mail' under your home directory but can be 'mail'. The internet connection wizard does not provide this option and you have to do it afterwords, by going to `Tools -> Account -> 'your IMAP account' -> properties -> IMAP -> Root folder path`. You also need subscribe your mailboxes by choosing 'IMAP folders' after you right click your IMAP account.

Please refer to the emailing tutorial in the how-to section of helpdesk website for a step by step guide.

4.2.2 Unix Mail Clients: Pine, Mutt

Since Unix systems are multi-user systems and GUI based applications usually take more system resource than text-based ones, text based mail clients were preferred. However, with increasing CPU power and memory on servers, X-based mail clients like `dtmail`, `netscape messenger`, `evolution` and `kmail` are more and more popular. Unix users are not under the monopoly power of Microsoft and enjoy many more options than windows users, provided you know apriori how to use them due to less intuitive user interface.

Pine is the most popular text based mail client under Unix. It is menu driven so you do not have to memorize keystrokes. Its default composer `pico` has been used outside of the regime of pine. To start pine, just type `pine` in the command line.

Much of pine's power is hidden under the SETUP menu. If you are going to use pine a lot, it won't be a waste of time to read through pine's options. Here is a simple list of what you can configure pine to do:

- Set up a signature file which will be append to every email you send.
- Set up a fcc folder to save a copy of sent emails.
- Use external editor other than its default editor pico.
- Use another program to print email. Refer to chapter 3.2.3 for details.
- Check multiple incoming mailboxes. This might surprise you since you always check your system mailbox for new emails. However, if you have lots of email, a program called 'procmail' can deliver incoming emails to different mailboxes, according to specified rules. Pine can then tell you what mailboxes have new emails.
- Set initial keystrokes to be executed after you start pine. You can then go to your inbox without having to type i every time.
- Use your mouse in pico.
- Give rules to tell pine how to save, sort, thread your emails.
- Set spell checker, URL-viewer, display and sending filter.

Please refer to the pine help system for details.

Mutt is another text based mail client. Its motto is pretty amusing: *"All mail clients suck, this one just sucks less."* Mutt is not bragging itself. It is much more flexible and much more powerful than all other mail clients, including those complicated GUI based ones. However, mutt is for Unix gurus only. It is not menu driven, so you will have to memorize how to do everything. It does not have a set up window so you have to edit its configuration file manually. Its outstanding features include

- color support. You can specify colors for almost everything. Emails can be colored differently according to its status and even according to its subject. Email header and special contents (such as quotations, url's) can be colored. If you use vim as its composer, vim is colored too.

- no default composer, you can use any of your favorite text editor.
- various features to support mailing lists, including message threading, list-reply. With a single key stroke, you can reply to mailing list (not the sender), to all senders (includes email addresses in CC field).
- highly customizable. By using keybindings or macros, you can move your email(s) to another mailbox with a single key stroke.
- POP3 and IMAP, MIME and PGP/MIME (encription), multiple incoming folders, multiple mailbox formats (mbox, MMDF, MH, maildir) support.
- change configuration automatically based on recipients, current folder, etc. Ability to specify alternate addresses for recognition of mail forwarded from other accounts, with ability to set the From: headers on replies/etc. accordingly

If you have some free time, read an interesting article "A man with his mutt" `www.devshed.com/Server_Side/Administration/Mutt/page1.html` and gain some confidence that you will not waste your time. Then go to the helpdesk dot file repository `http://www.stat.rice.edu/~helpdesk/dotfiles` and grab a copy of mutt configuration file .muttrc, read it and modify it accordingly. You should be able to see mutt's colorful interface with the help of `rxvt` (see chapter 8.4). If you are really into mutt, mutt's online manual will tell you how to do everything.

Mutt is not supported by Rice IT department It is installed under helpdesk trial software collection. To use mutt, you can either add `/home/helpdesk/bin` to your `$PATH` in your `.cshrc` or `.rc/.cshrc.solaris` file or use its full path name `/home/helpdesk/bin/mutt`.

4.2.3 Unix X-based Mail Clients: dtmail, netscape messenger

X-based mail clients are more easy-to-use, with the cost that they are in general much bigger (than text-based mail clients_ and thus need more time to load. Another disadvantage is that you can not start them remotely without an X-server (for example, X-Win32) and you do need at least DSL/Cable

Modem connection to start them via SSH+X-Win32 in a reasonable amount of time.

If you are using CDE (Common Desktop Environment), dtmail is the default mailer. It lacks many important features of modern mail clients and is very slow when you have a big mailbox. However, it provides a decent interface to basic emailing jobs and can be used if you need a light-weight X-based mailer. dtmail can be started from command line or by clicking the mail icon of your CDE panel. You need to add `/usr/dt/bin` to your `$PATH` to start dtmail from command line.

Netscape messenger is a much more sophisticated X-based mail client than dtmail, comparable to OE under windows. It supports HTML email, multiple POP3, IMAP accounts, encryption, MIME, provides incoming filter, ability to import emails from other mail clients, full-featured address book.

To start Netscape messenger, open Netscape and choose messenger from communicator menu or click the messenger icon at the lower-right corner of any browser window. You can also let Netscape open messenger automatically if you set starting options from `Edit -> Preference -> Appearance`. Other options, including accounts can be set at the mail and newsgroups section of the preference window.

Mozilla is a GNU licensed broswer based on Netscape. Its messenger is more robust than Netscape messenger and has quite a few new features. You can start mozilla by typing

```
/usr/site/mozilla/bin/mozilla
```

or add `/usr/site/mozilla/bin` to your `$PATH`. Mozilla messenger can be brought up in the same way as netscape messenger.

4.3 Webmail

Rice webmail page `http://webmail.rice.edu` is not a purely web-based mail system like yahoo mail or hotmail, it provides another way to access your emails on your Unix accounts. If you are away on vacation or conference, and there is no remote access software like SSH available, webmail might be your only choice. You only need to go to the Rice Webmail Page `http://webmail.rice.edu`, select your mail server and then log in with your appropriate Unix user name and password (most of us use `stat.rice.edu`). All other operations are straightforward.

If you will be away for a relatively long period of time and would like to keep reliable email connection with others, prepare yourself with an alternate method. Forwarding all your email to your real web account such as yahoo might be a good idea since yahoo is more reliable and accessible than Rice webmail. Procmail can do this for you.

4.4 Mail Filtering, Vacation message

Procmail is mail filtering software that can pre-process your emails according to the rules you specify. For example, if you subscribe to several mailing lists, procmail can put then into their own mailboxes so that they do not interfere with your important emails in the inbox. Procmail can also be used to modify, forward, delete (stop spam) or backup your emails. Since it uses standard Unix regular expressions and Unix commands, the filtering rules and actions are extremely flexible.

To set up procmail, you need to first edit a .procmail file. The Helpdesk dot file repository `http://www.stat.rice.edu/~helpdesk/dotfiles` has a sample .procmail file that you can copy and use. Although this file is well-commented, you would better learn some basics from spambouncer.org `http://www.spambouncer.org/proctut.shtml` or other online procmail tutorials. Another tutorial `http://www.umbi.umd.edu/computing/procmail.html` focus more on regular expressions.

After you modify and put .procmailrc under your home directory, create a file named .forward with the following line:

```
"|IFS=" " && exec /usr/local/bin/procmail"
```

and your incoming emails will be filtered as you requested.

If you are away on vacation and will not be able to return emails in time, it is customary to reply each incoming email with a “vacation message”. This can be done by typing command

```
vacation
```

in command line. Anyway, procmail is safer and more flexible to do this especially when you receive many emails from mailing lists[2]. An example can be found from procmail sample rc: `siteman procmailex`

[2] You can not use Unix vacation program and procmail at the same time since they both use the .forward file. You will have to use procmail if you need to filter your mail while you are out of town.

Chapter 5

Web Browsers and Homepages

It is quite easy to set up web pages on the stat, owlnet or ruf networks: all you need to do is put your web pages under a specified folder. On stat network, this folder is `/www/yourusername/public_html`; on owlnet or RUF this folder is `~/public_html`. It is important to put a file named index.html under these folders since it is the default page, i.e., it is the web page that will be displayed when you type in `http://www.stat.rice.edu/~yourusername` (or other servers like `www.owlnet.rice.edu`) in any browser. If there is no index.htm, a set of files and folders will be displayed and someone can browse through the files in your public_html directory. This rule also works for other directories. This is nice if you're working on a project or something and want to post some files for anyone to see and easily get. If you really do not want people to see all files under a folder, you can put an index.html under that folder with a 'sorry' message. You can also make the index.html unreadable (chmod o-r index.html) and viewers will get an error message instead.

Since each account is separate (ie stat, owlnet, RUF), you could, in theory, have 3 different web pages on 3 different servers, an owlnet page that people searching for you on the Rice homepage would find, another on the stat network that people browsing the stat homepage would find, and a third on RUF that nobody would find (unless you told them where to look). Some possible uses would be to post a resume on your owlnet web page, information about your areas of interest in statistics on your stat homepage, and a personal page on your RUF account. But it's easy enough to create multiple pages in any one account.

It seems that Microsoft has won the browser war and there is only one web browser: Internet Explorer left. However, IE for Unix is still buggy and you would better use other browsers. There are many other options and mozilla is the best one. Mozilla is installed under `/usr/site/mozilla/bin` and you can invoke it by its full path name or add this path to your `$PATH`. Anyway, mozilla can be slow and if your computer is not powerful enough, Netscape is still a better choice. If you are a Unix guru, `lynx` is a text based browser. There are two situations that you might want to use lynx: you want to convert a web page to a plain text file so that you can view it easily (as used by pine or mutt), or if you have only a terminal access to stat servers but need to view a web page or download some files.

A caveat about web pages and the Internet - There is no unified webmaster for engineering, Rice in general or statistics. We do not have a real webmaster for the Stat website. E.g., course pages are available on stat website, rice course pages, and professors' websites. (Things are disorganized, and everyone has an opinion) See the section above for information on where/how to host web pages on Rice's network.

Chapter 6

Statistics Software

You will use S-Plus a lot, as well as SAS, matlab, and mathematica (or maple). In general, windows versions of these software are easier to use. However, if you are daling with exceptionally large amounts of data (more than there is RAM on your PC machine), windows versions will not be able to handle it efficiently and you are better off using their UNIX counterparts. On the other hand, many of the newer PC's have much more powerfull processors than UNIX clusters and can utilize upto 3GB of RAM, as such extensive computations are much faster on PC workstations (provided you have sufficient resources). Plus, not having to share your processing time with dozens of users usually speed things up. Below we elaborate more on UNIX versions of these.

The University has licenses for windows versions of S-Plus and MATLAB that allow you to install both on your home (windows) computer. The S-Plus license requires you to be a student here, and the MATLAB license requires you to be connected to the Rice network (via a port at Rice, a dial up connection, or via a VPN connection (I am not sure about this option.)). To obtain copies of this software, submit a problem.

We run a shared networking system, and there will be other people trying to use the same computers you are using. Use the `nice` and `top` commands frequently, particularly if you are running large simulation jobs or Splus. That is to say, instead of typing `Splus`, try

```
nice +19 Splus
```

If you have a job that has been started but is running slowly (I doubt how you can tell), you can press `Ctrl-Z` to suspend it and

```
renice +10 job-pid
```

Few things irk your cohorts more than trying to do something and having the computer either crash or work extremely slowly because you're running a huge job at top priority for a long time when you can't be found. The most likely outcome in such scenarios is that a systems administrator will be summoned to kill your process.

6.1 S Plus/R

S-Plus is available on all stat servers and on vet. Under Unix, you can invoke S-Plus by typing command `Splus`. If S-Plus does not come out, add `/usr/local/bin` to your `$PATH` or use full path name `/usr/local/bin/Splus`.

The Unix version of S-Plus (currently v6.0 Release 1) does not have a graphics user interface as its windows counterpart. It is terribly difficult to enter command, edit S-Plus script using only command line. Luckily, ESS greatly improves the usability of Unix S-Plus, please refer to the next section.

There are many good S-Plus books. *The Basics of S and S-PLUS* by Andreas Krause and Melvin Olson, *Modern Applied Statistics with S-PLUS* by W.N. Venables and B.D. Ripley are two classic ones. The first book is a good introduction while the second on can be used as a good reference. Dr. Baggerly has put together a two part S-Plus tutorial. It has been modified and now resides at helpdesk `http://www.stat.rice.edu/~helpdesk`. However, believe me or not, the best way to learn S-Plus in a systematic way is to follow the *S-PLUS programmer's guide* which come with S-PLUS distribution and is available in the library.

I'll reiterate that as a student you can install S-Plus on your home windows machine. Another alternative is the 'free' version of S-plus, known as R `http://www.r-project.org/`, which has most of the same commands, runs most S-plus scripts, but, from a computer science perspective is better written. It was lacking of some important S-Plus features like trellis graphics but the huge user community has written many R packages, including a recent package that does trellis graphics, and makes R a better choice under many circumstances.

R is available free for all platforms. You can download and install the windows version from R Download Page `http://cran.r-project.org`. On stat network, R is entailed under helpdesk along with all packages on R package webpage `http://cran.r-project.org/src/contrib/PACKAGES.html`. It is preferred that you start R with ESS but you can also start it directly by typing command `/home/helpdesk/bin/R`.

6.2 ESS (Emacs Speaks Statistics)

As I have mentioned, S-Plus under Unix is very difficult to use. People who are familiar with emacs soon come out a way to relieve the pain using 'emacs shell mode'. That is to say, you can,

> start emacs: `emacs`
> start a shell: `M-x shell`
> start S-Plus in this shell: `Splus`

After you start S-Plus within emacs, you can edit your S-Plus script in other windows and copy-paste command into S-Plus command line. You can now even edit the command line with emacs command.

However, people who are really familiar with emacs, know its omnipotence did not stop here. They started writing emacs extensions specifically for S-Plus, R, SAS etc. The result is ESS (Emacs Speaks Statistics.) which provides

- Command line editing. In addition to what Splus/windows provides, you can edit previous commands, search the command history ...
- Completion. You can use tab to complete a command.
- Transcript recording. You can record all the actions in an S-Plus session.
- Syntax awareness editing of splus script and facilities to evaluating S code. (More than what F10 can do under windows.)

To check if ESS has been properly set up, simply start emacs and fire command `M-x S`. If S-Plus does not start, check your .emacs file and visit helpdesk dot file repository. For more information about ESS, visit helpdesk FAQ page `http://www.stat.rice.edu/~helpdesk`. Note that you can also start R from within emacs by command `M-x R`.

6.3 SAS

S-Plus and SAS are both very important statistical software packages. Although it is possible to use only one of them, the combination of SAS and S-Plus is far superior to either one alone. S is weakest in those areas where SAS is most capable, and vice vera. S-Plus has more types of data objects and gives you exploratory tools so that you can analyze your data step by step. You would better understand each step to make sure S-Plus is doing the right thing for you. On the other hand, SAS takes your data and does specified statistical analysis and gives you a comprehensive report. Simply put, S-Plus is stronger at exploratory statistics, data visualization, statistics method development while SAS is preferred for serious analysis, especially for large data sets.

If you would like to install SAS on your PC, you need to submit a problem to obtain a license. This license valid for one year and you will receive a yearly renewal notice in campus mail.

On the stat network, SAS is installed under `/usr/site/sas/bin` and you can start it with command `sas`. (Again, if `$PATH` is not properly set, add `/usr/site/sas/bin` to your `$PATH`). Many students find that the command editor in SAS is not very convenient. If you feel the same way, edit your script in emacs and paste them to SAS.

It is possible to use SAS within emacs/ESS but I have not figured out how to set up ESS for SAS. Please email helpdesk `mailto:helpdesk@stat.rice.edu` if you have success in doing so.

6.4 Matlab

Matlab `http://www.mathworks.com/products/matlab` is, as its name implies, matrix laboratory. You might already be very familiar with it if you have an applied mathematics or engineering background. Although matlab provides a statistics toolbox, it is not a comprehensive statistical software. Its advantage lies on its fast and easy to use matrix computation which is far superior than SAS' interactive matrix language (IML) and S-Plus's matrix and array operations.

Matlab V6 is installed on stat network as well as vet. To start matlab, type command

```
matlab
```

You can also start matlab in text mode by adding option '`-nodisplay`'.

Sometimes you need to run matlab in batch mode. For example, you need to run some kind of simulation for several hours or days in background. In this case, you need to edit a command file with `quit` command at last, for example, a file named batch.cmd with content

```
for i in 1:1000,
simulation(i)
end
quit
```

Then, you can start simulating with command

```
nohup matlab -r batch.cmd -nosplash -nodisplay > simulate.log
&
```

The nohup command guaranteed that your process will not be killed after you log out.

6.5 Mathematica and Maple

Mathematica `http://www.wolfram.com` and Maple `http://www.maplesoft.com` are both powerful tools to do symbolic computation. They both provide facilities for interactive algebra, calculus, discrete mathematics, graphics, numerical computation and many other areas of mathematics. Choice between these two is personal. Note that matlab's symbolic toolbox is based on maple.

Mathematica and Maple V6 are currently installed on stat network. There are two versions of both of them, text based and X-based. The command to bring up X-based mathematica is `mathematica` while is `math` for the text based version. `maple` and `xmaple` start maple in test mode and X mode respectively. When Maple begins running, it will automatically execute the commands in the file .mapleinit in your home directory, if it exists.

6.6 Other statistics software

SPSS for Unix is not installed on stat network. If you would like to use it, you can either use SPSS on `vet.ruf.rice.edu` or request a copy for your

PC. Like SAS, the license for the PC version of SPSS need annual renewal. Rice also has site license for Systat for windows.

Minitab is often used for undergraduate courses. It is pretty simple and you can learn it quickly with the students if your TA duty requires you to do so. Minitab works only under DOS/Windows and there is no site license for it. Ask your professor or Diane if you need a copy for your TA job.

The GAUSS Mathematical and Statistical System is a flexible and powerful programming language that provides a wide variety of statistical, mathematical and matrix handling routines. It has over 400 functions built-in, including EISPACK and LINPACK (another word for speed) routines which means you can make your simulation run much faster than S-Plus counterparts. Gauss is available on vet. You can start gauss 3.2 with command `gauss`. A terminal only version of gauss 3.4 can be started with command `tgauss`.

BUGS `http://www.mrc-bsu.cam.ac.uk/bugs` stands for Bayesian inference Using Gibbs Sampling. It is used to analyze complex statistical models using Markov chain Monte Carlo (MCMC) methods. Its windows version (called WinBUGS) can be downloaded from its website for free (you do need to register) and its Unix version (called ClassicBUGS) is installed on stat network. Please refer to its online document for using classicBUGS. It is a pity that classic BUGS has not been under development for quite a long time and stays at its 0.7 version while WinBUGS is on version 1.3. As a direct result of this, classic BUGS and WinBUGS have a slightly different grammar and totally different usage. You will feel the inconvenience when you are forced to port your WinBUGS code to classicBUGS when you need the power of Unix for your simulation.

gnuplot is a useful program to generate high resolution figures from your data. It is free but has nothing to do with GNU project. It might not be worthwhile to learn gnuplot to interactively plot your data, (S-Plus can do this beautifully, though more slowly). But if you are writing your programs in C or Fortran, gnuplot is the easiest way to incorporate graphics ability into them. This approach has been used by many small statistical applications like GeoStat.

Chapter 7

Word Processing

7.1 Word/Powerpoint/TexPoint

Word and powerpoint are extremely powerful and popular, but not necessarily the best software for mathematical articles and presentations. If you do need fancy decorations, animations, word/powerpoint are your only choice. However, if you are going to have tons of mathematical formulae in your article or presentation, you would do better to turn to latex. As a rule, mathematical formulas come out better under latex, than in Word (there is that problem of MS Equation Editor automatically resizing the formulas so none of them are the same size as the other). A word of caution though, while an experienced LaTex user can produce phenomenal outputs, it takes a while to get that good. If you are writing a book, a thesis, or other lengthy text, LaTex is extremely useful. If you are writing up a project report due tommorow, there is nothing more frustrating than trying to figure out a command to put your latex picture in exactly the spot you want, or trying to create a pretty looking table. My advice to those unfamiliar with $\TeX$, is to start a couple of days early or switch to Word.

However, with the help of a powerpoint add-in, you can have beautiful formula in your powerpoint presentation. To do this, you need to install[1]

- MikTex `http://www.miktex.org`, a windows version of latex
- Ghostscript and ghostview `http://www.cs.wisc.edu/~ghost`, viewer and converter of ps files.

[1] You need administration privilege to install TexPoint.

- TexPoint `http://raw.cs.berkeley.edu/texpoint`, a latex add-in for powerpoint.

Please refer to TexPoint web page for more information. TexPoint allows you to use latex command along with your regular text. For example, you can insert

```
\alpha_0 \times \beta^* \rightarrow \Gamma
```

and use a hot key or menu item to convert it to

$$\alpha_0 \times \beta^* \rightarrow \Gamma$$

The magic underneath is that TexPoint calls MikTex to compile and obtain a ps file and then uses ghostscript to convert the ps file to a windows bitmap file and then inserts it into powerpoint.

7.2 Emacs/Vim

When speaking of text editors, notepad or wordpad under windows are far less powerful than both emacs and vim (VI iMproved). If you are not satisfied with default windows editors you can always download a free version of UltraEdit. On the other hand, while windows based text editors do not stack up to their UNIX counterparts, you are not restricted to editing your files using generic text editors (unlike in UNIX). For example, if you want to write C++ code, MS Visual Studio will provide an extremely powerful interface, with command completion, workspace organization, etc... S-Plus 2000, the PC version of Splus, also provides a very powerful engine for writing and organizing S (arguable more powerful than emacs), combined with ability to immediately view graphics and modify them on the fly.

If you do decide to use S-plus under UNIX, basics about emacs is absolutely necessary. If you are new to emacs, emacs' online tutorial is a very good one. Just start emacs and choose `help -> Emacs tutorial` and you are on the way.

After a while, your mind will be filled with strange key combinations and start feeling frustrated. You have two ways to get out. The first one is keep a emacs referene card `http://www.refcards.com` at hand. It will take a while before you get familiar with these keys but you will have no problem start using emacs. The other way is to let emacs work in the way you want by changing these key-bindings.

This sounds like a terrifying job, but it is not. If you familiar to windows key bindings such as Ctrl-X (cut), Ctrl-C (copy), Ctrl-V (paste), Ctrl-Z (undo), shift-arrow select etc, you can have them in emacs. All you need to do is add the following line to your .emacs file:

```
(load "/home/helpdesk/trial/cua/cua")
(CUA-mode t)
```

You can define other windows keys like F1, F2 etc. Please refer to the dot file repository for sample .emacs.

If you are familiar with vi, you have no reason to be afraid of vim. Vim is a fully compatible, greatly enhanced vi. The best improvement is that you can move around with your arrow keys in insert mode. With a little configuration (refer to .vimrc file in dotfile repository), you can have syntax awareness color editing for almost all type of files, super easy find and replace and much more.

There are other editors like `nedit`, `jed` but they are not available on stat network.

7.3 Latex/WinEdit/Scientific Workplace

Scientific Workplace is simply the best WYSIWYG latex software under windows, especially for new latex users. It hides all latex complexities under its GUI interface and provide shortcuts for all common symbols. With the help of menus, toolbars, especially keyboard shortcuts, inputing math formula is really easy. A notable feature of SWP is that you can name and save any fragment of text or formula so that you can use it later by its name.

Scientific Workplace, like most software packages are available to rice graduate students for free.

WinEdit is another latex software under windows. It is not WYSIWYG. It displays plain latex file and it will insert `\alpha` if you click 'a' from the toolbar. Many experienced latex users like WinEdit since they can make use of toolbars, menus, shortcuts to speed up inputs and have full control of latex source code as well.

Both software are not Rice supported and you have to buy them yourself. (I heard that Rice will have site licenses for SWP.)

7.4 Latex/Emacs tex mode

A big advantage of latex is that .tex is plain text file so that you can edit latex source files with any text editor. Although vim provides latex syntax-awareness editing, emacs is more widely used because of its tex/latex mode.

The tex mode is installed with emacs and you need to add

```
(setq tex-dvi-view-command "xdvi")
```

to your .emacs file so that emacs know how to display dvi file. Two important shortcuts are `C-c C-f` and `C-c C-v`. The first shortcut calls latex to compile your tex file and the latter call the xdvi to display the generated dvi file. Note that emacs use its own temporary files and you will have to compile your tex file outside of emacs to get a real dvi file.

There is another tex mode called UltraTex `http://www.math.washington.edu/~palmieri/Emacs/ultratex.html` which provides some very useful features such as latex command auto completion. (You type `\b`, if `\begin` is the only latex command in your tex tree, a term used by UltraTex, `\begin` will be inserted automatically.) This package is available under helpdesk. To make use of this, add the following lines to your .emacs file:

```
(setq load-path (cons "/home/helpdesk/trial/ultratex/lisp"
load-path))
(require 'light)
(require 'ultex-setup)
```

You then can start Emacs and customize the packages as desired, by using the commands

```
M-x customize-group lightning-completion
M-x customize-group ultra-tex
```

You may need to load the ultex package, say by typing `M-x load-library ultex` or by opening up a TeX file, before you can do the second customization. Please refer to UltraTex webpage for more information.

7.5 Latex/Lyx

This document is written in lyx `http://www.lyx.org`, a (almost) WYSIWYG latex software. Lyx is not an independent latex software like SWP in the sense that lyx converts its .lyx file to .tex and call latex to compile and make use of standard latex tools such as `xdvi, dvips, pd2pdf, latex2html` etc as its viewer and converter. Because of this, lyx has no compatibility problem with standard latex and you can always work with the exported latex file directly if necessary.

Lyx has many distinguished features. What I like most is its configurable key bindings. You can choose binding styles from SWP (scientific workplace key bindings), CUA (windows word like keys) and Emacs and add your own keybindings easily. Helpdesk dot file repository has a binding file that has all usual math symbols and you can make use it by copying it to `~/.lyx/bind` and set `Edit -> Preferences -> Look & Feel -> Interface -> Bind file` properly.

The best way to learn lyx is through its online help system. All tutorials are written in lyx and you can try all the commands while reading.

Lyx 1.1.6fix4 is installed on `/usr/local/bin` and you can start it by typing `lyx`. Lyx will detect your system settings, configure itself and create a folder .lyx under your home directory at the first time.

Lyx has been ported to windows. However, because lyx is based on latex, X-system and various Unix tools, you have to have MikTex, cygwin and other companion software. Please refer to lyx for windows webpage `http://www.fh-hannover.de/mbau/tim/hentschel/lyx/index.htm` on how to install lyx on windows.

7.6 Latex/Presentation

Standard Latex packages could not put a logo at a fixed position of each page and could not add fancy backgrounds so latex was considered by many of incapable of doing presentations. This changed in recent years when lots of packages were written for latex presentation. Michael Wiedmann has put together an online book Screen Presentation Tools `http://www.miwie.org/presentations/presentations.html` that covers almost all available packages. We will only discuss two of them: ppower4 and prosper.

PPower4 `http://www-sp.iti.informatik.tu-darmstadt.de/software/`

`ppower4` is a post processor for latex files to build pages step by step. It provide a small package (pause.sty) which let the user insert small spots (using \pause command) in the PDF file where a break should be made during display. The resulting PDF of the following code, when displayed, will have the effect of one item per keystroke.

```
\begin{itemize}
\item item 1 \pause
\item item 2 \pause
\item item 3 \pause
\end{itemize}
```

Other packages are also provided to put background images and page transitions to your latex presentation.

Prosper `http://prosper.sourceforge.net/prosper.html` is a latex class for writing transparencies, as well as doing projection presentations. It is on top of seminar class of latex. It has more features than ppower4. The source code is like

```
\begin{slide}{Introduction}
.....
\end{slide}
```

PPower 4 and prosper are installed under helpdesk. Because their pathes are not in standard searching path of latex, you will have to specify them in environment variable `TEXINPUTS`. This variable is a colon separated string of list of pathes, including `.` as current directory and `/usr/site/teTeX/texmf/tex//` as system defaults. If you are using csh or tcsh, you can put the following line (join the two lines shown below) into your .cshrc file.

```
setenv TEXINPUTS '.:/home/helpdesk/trial/latex/ppower4:
:/home/helpdesk/trial/latex/prosper:/usr/site/teTeX/texmf/tex//'
```

If $TEXINPUTS is properly set, latex should be able to load and compile ppower4 and prosper packages. Since ppower4 is a post processor for PDF file, you need to call /home/helpdesk/bin/ppower4 to process the generated PDF file (pdflatex is recommended) .

It is possible to use prosper with lyx. Details can be found at the Lyx tips and tricks page. `http://www.lyx.org/help/index.php3`

Chapter 8

Utilities

Unix/Linux systems are different than windows in another big way. They have a great amount of small tools that accomplish relatively small tasks and you sometimes need to put together several commands to get what you want. Knowing how to automate these procedures by shell script, make, perl, alias etc, can greatly improve your efficiency. Windows system, on the other hand, tends to have several huge, comprehensive and independent applications. They are usually easy to use but leave no room for cutomization and automation.

If not clearly specified, all applications mentioned below are for Unix. It is impossible to explain each command in detail so only the most typical usage are shown, usually in the form of examples. You can find out more about these commands easily by either googling the internet for tutorials or using the `man` or `siteman` commands to get their manuals.

8.1 Latex related

There are a series of latex related commands. A usual latex sequence is

example	purpose
`latex file.tex`	Compile latex source file
`xdvi file.dvi`	Display the generated dvi (device independent) file
`dvips file.dvi`	generate ps file (to print or distribute).
`ps2pdf file.ps`	generate pdf file.

`pdflatex` can produce .pdf file directly from the .tex file and `latex2html` can be used to convert your latex file to HTML format. Another command `dvipdfm`, usually available in Linux distributions, can be used to convert dvi files to pdf format. Note that `pdflatex` can not deal with eps inserts while `dvipdfm` can.

8.2 Compress and decompress

There are many compression formats and you need different tools to compress/decompress them.

extension	compres command	decompress command
.Z	`compress`	`uncompress`
.zip	?	`unzip`
.gz	`gzip`	`gzip -d`
.bz2	?	`bzip2`
.tar.gz	`tar zcf`	`tar zxf`

The last format is actually compressed tar file. New version of `tar` can compress/decompress tar file directly but if your `tar` does not have a `-z` option, you can use two separate commands:

```
gzip -d file.tar.gz
tar -xf file.tar
```

or use pipe

```
gzip -cd file.tar.gz | tar xf -
```

8.3 Graphics

`Gimp` is installed on stat network which can load, edit and export many graphic formats. It should be able to accomplish most of your graphics task.

`xv` is mostly a image viewer as its name X-viewer impiles. It can also be used as an image capturer, which becomes very handle if you need to write a tutorial with pictures of working applications.

Figure 1 of this guide is drawn in `xfig`. It looks like the paintbrush in windows but has more functions and uses vector format rather than bitmap. Its `.fig` file can be exported to a variaty of formats, including `.eps, .jpg,`

`.png`. It is advised that you export your figure to both `.eps` and `.png` since latex uses eps inserts and `pdflatex` uses (by default) .png format.

8.4 Miscellaneous Tools

Standard xterm does not support color. To make use of text based color-capable applications like mutt, you have to use more advanced terminal emulators. Alghouth `gnome-terminal` is available for most Sun Workstations, `rxvt` is the only available color terminal on stat servers. rxvt supports standard xterm options so you can start mutt in a separate rxvt window using a command like:

```
rxvt -bg black -fg green -e mutt
```

`cvs` (Current Version System) maintains a center repository and let you check out, check in files conveniently both locally and remotely. It allows you to work on the most current version of your files from any machine and can help you keep track of revision changes. The usual senario of using cvs system is:

```
cvs co project
cd project
....  work on the project ...
cvs commit
cd ..
cvs release -d project
```

The first command check out your project (a directory) from the center repository and put it under your current directory. You can then work on the project locally. After you are done, `cvs commit` will check in the modified files to the repository. You can then delete the local copy if you wish. Detailed information on how to set up your own cvs repository can be found at the helpdesk how-to webpage. `http://www.stat.rice.edu/~helpdesk/how-to`.

8.5 Summary tables

8.5.1 File Viewers

The following is a summary table of file types and how should you treat them.

Table 8.5.1: File Viewers

format	extension	viewer (command)
latex source	.tex	all text editor
dvi	.dvi	`xdvi`
postscript	.ps	`gv` or `ghostview`
Adobe PDF	.pdf	`xpdf` (linux), `acroread` (Unix)
Encapsulated Postscript	.eps	`gv` or `ghostview`
HTML	.htm, .html	any browser: `Netscape, mozilla, lynx`
picture formats	.jpg, .png, etc	`xv`
vector graphics	.pic	`xfig`
windows office files	.doc, .ppt	`staroffice` (other viewer?)
compressed files	.Z	`uncompress`
gzip compressed	.g	`gzip -d`
ziped	.zip	`unzip`
tar	.tar	`tar -xf`

8.5.2 File Converters

The following table lists many Unix command that are used to convert files from a format to another. Note that not all the converters are available on stat network.

Table 8.5.2: File Converters

format1->format2	command	typical usage
`.tex -> .dvi`	`latex file.tex`	
`.dvi -> .ps`	`dvips file.dvi`	
`.ps -> .pdf`	`ps2pdf file.ps file.pdf`	
`.ps -> .eps`	`ps2epsi?`	insert into latex
`.dvi -> .pdf`	`dvipdfm`	
`text file -> .ps`	`enscript`	for printing
`.tex -> HTML`	`latex2html`	
`.pdf -> .ps`	`pdf2ps`	for printing
`HTML -> Text file`	`lynx`	rip off tags.
`wmf -> eps`	`jpeg2ps`	insert windows graph into latex
`bmp -> eps`	`jpeg2ps`	
`.tex -> pdf`	`pdflatex`	compile latex directly to pdf
`.fig -> ps`	`fig2ps` (helpdesk newbin)	
`.eps -> .jpg`	`?`	
`.fig -> .jpg, .png`	`xfig, file -> export`	
`.tiff -> .ps`	`tiff2ps`	

Chapter 9

Remote Access

It is possible to use the department computers remotely. This requires getting an off-campus dialup account via owlnet (a charon account). Details are available from Consulting Center (103 Mudd, x4983), but you can start by going to the Rice Online Application Webpage `http://apply.rice.edu` and following the directions, choosing the dial-up account. They provide you with directions for dialing up. (if anyone needs linux dialup support, `blairc@rice.edu` can help)

9.1 X-win32

If you are using a Windows machine, there are going to be a lot of times that you want to move files and information between windows and Unix machines. There are several options available to you. You can download software like Emacs and LaTeX `http://www.latex.project.org` (called MikTeX `http://www.miktex.org` on the Windows platform) and run them on your PC. Or, you can actually 'get' a Unix window on your PC (that is, a graphical window on your PC that is actually running commands on a Unix machine somewhere else). The graphical display on Unix is known as 'X', and to get an 'X' term (a graphical command line, as opposed to a screen with only a command prompt) in windows, one must then get a program called `X-win` (also known as X-win32 for windows 95,98,2000,etc). With X-win running, you get almost the exact same responses as being at any Unix terminal- you can type things like `emacs`, `netscape, xterm, sas` and more windows should pop-up.

The license of X-win32 only applies to campus network and you can not use them at home. If you do need a free X server for your home PC, cygwin/Xfree86 is your best bet. It provides you not only a X server but also a Unix like environment with many standard Unix tools like bash, tcsh, rxvt, gzip, make, gcc, ssh.

9.2 SSH

In order to use X-win, there is a catch at the moment. You also need software known as SSH (Secure Shell), which is like telnet in that it allows you to talk to other computers, but as the name implies, it encrypts your computer's conversation with other computers, thus making it much harder for anyone 'listening' to take your passwords, or any other important information. SSH and X-win can both be obtained free of charge from the Rice IT Software Page `http://software.is.rice.edu`. Don't forget to get a license key from the license page `http://software.is.rice.edu/License/index.html`. For X-win and other software by OS, click on the links at the bottom. SSH also includes an encrypted FTP program, giving you a graphical interface that allows to to easily see and select the files you wish to move. Michael Swartz has put together a two help files that show how to set up both X-win and SSH.

9.3 Other Options (VNC)

VNC `http://www.uk.research.att.com/vnc` is free software that lets you operate remote machines. It displays the remote screen in a local windows or in full screen mode and sends your keyboard and mouse actions to the remote machine, regardless of the underlying operating system. The remote machine is called a VNC server and has to run VNC server software while vncviewer is a very small program that connects to VNC servers. Since the installation of the VNC server needs root or administrator previlege, VNC is commonly used to control your home machines.

Chapter 10

Having Problems?

Sooner or later, you're bound to come across some sort of computing related problem. Whether that 'paper jam' error just won't go away, or your computer begins running excruciatingly slowly, you want to bring your laptop into the office - there's bound to be something. This is where problem.rice.edu `http://problem.rice.edu` and statistics helpdesk comes in.

10.1 http://problem.rice.edu

To report a problem, just go to the problem homepage, choose what area your problem is in, look at the list of frequently posed problems to make sure your problem isn't a common one with a simple answer, then fill out the problem form. Unix problems are generally handled by Eric Aune, and Windows problems by Byron (please don't contact them directly - go to the website with all problems). However, if there is an extreme emergency (say the entire stat network goes down at 9pm), you can call the IT emergency services at x4989.

If you are off-campus, you would not be able to access the Problem Webpage without a VPN account. In this case, you can send your problem to `problem@rice.edu`. Since there is no form to fill, remember to write clearly the problem priority, interested parties, how you can be reached etc.

10.2 Helpdesk, Helpdesk Computing FAQ

Helpdesk `helpdesk@stat.rice.edu` is a place where you can ask "How can I..." as opposed to the "What's wrong with..." question you send to the Rice problem tracking system. Helpdesk also maintains a list of frequently asked questions, some how-to files and some sample dot files. The present helpdesk consultant is Bo Peng `bpeng@rice.edu`.

Although helpdesk and problem tracking system have different functions, you do not have to think hard where you should direct your problem to. You can submit your problem and add helpdesk@stat.rice.edu (and some times Diane `mailto:dbrown@rice.edu`) as an interested party, and helpdesk will reply your question if appropriate. Questions that should be send to problem tracking system will be forwarded to it if necessary.

10.2.1 Helpdesk Computing FAQ and HOW-TOs

Helpdesk homepage `http://www.stat.rice.edu/~helpdesk` has a link to helpdesk computing frequently asked questions. This FAQ page provides answers to some common problems about how to configure and use the Unix operating system and certain statistical software. They are less organized than this guide but has more detailed solution to some problems.

Helpdesk also has a few how-to files that aim to some specific topic. You can find links to them from helpdesk homepage or list `/home/helpdesk/howto` directly. Although internet toturials are helpful, these how-tos, such as `prosper.howto`, `cvs.how-to` target directly to stat network and have specific instructions.

10.2.2 Helpdesk Trail Software Collection

`/home/helpdesk/bin` is called helpdesk trial software collection. It has some software that are not supported by Rice IT department such as `mutt, R` and `rxvt`. If you are interested in certain software that is not supported by Rice IT, you can send an email to me and I might be able to install it under helpdesk.

`/home/helpdesk/newbin` is another interesting directory that you might want to put in the first place of your `$PATH`. It has the newest version of some applications that has been installed on stat network. For example, you can use `/home/helpdesk/newbin/pine` instead of `/use/local/bin/pine`. The advantages (and disadvantage) of the previous one are that it has the newest features and there is no pre-set parameters so you can set up pine in the way you want.

10.2.3 Helpdesk Dot File Repository

Dot files (or dot directories) are files with dot ('.') as the first character of their names. They are hidden under Unix and will not be listed with `ls` command. Instead, you will have to use the '`-a`' (all) option of `ls` to list them.

Dot files (or directories) are widely used by Unix applications. They can be shell script to be run by shell programs at start-up, configuration files to set run-time parameters, backup files to save session information. Some dot files are essential to the use of some programs like shell programs and emacs.

It is not easy to write a usable dot file so helpdesk collects some sample dot files so that you can copy them, try to understand them and then modify them for your use. For example, `/home/helpdesk/dotfiles/emacs-ess.el` is a ready to use .emacs file with ess support. All you need to do is adding the contend of this file to your own .emacs file by

```
cat /home/helpdesk/dotfiles/emacs-ess.el >> .emacs
```

Before you use any dotfile, read `/home/helpdesk/dotfiles/readme` to know the usuage of it. I have tried to put as many comments in each dot file as I can and marked clearly the has-to-be-changed parts. Please email helpdesk `mailto:helpdesk@stat.rice.edu` if you have any question or suggestion about them or would like to donate your own dot files.

10.3 Other Resources

Mudd Lab has exhaustive stacks of help manuals on everything from learning HTML (how to write a webpage) to writing advanced shell scripts to using Emacs. If you need something, but don't know where to look, I would start there. If they don't have any on the shelves, ask them and they'll print some more.

Learning Unix commands and related Unix resources like Emacs `http://www.gnu.org` are absolutely essential and you should spend some time working with them before you need them so you won't be frustrated at the last minute because you are not familiar with a command and don't know how to use it. You can check out the official GNU Emacs manual `http://www.gnu.org/manual/emacs-20.3/emacs.html` or here are some Emacs resources `http://www.maths.lancs.ac.uk/~rowlings/Splus/Course99/emacsintro.html`, although searches for 'emacs introduction', 'emacs command' produce a few all right results. There is also some assorted software at Rice IT Software Webpage `http://software.is.rice.edu` that has things like SSH and license information for X-win.

Chapter 11

Computing Policy

Here are some assorted Rice policiespolicies `http://www.ruf.rice.edu/~presiden/Policies` paying specific attention to these `http://www.ruf.rice.edu/~presiden/Policies/General/832-99.html` for computing policies. These policies are THE final word on policy, and no individuals are outside their scope. For more opportunity to discuss computing policy, visit: http://www.rice.edu/Computer/Policy `http://www.rice.edu/Computer/Policy`.

You are also obliged to sign a *Responsible Computing Agreement* when you check in with Diane. This agreement states your responsiblity to protect the security of the stat network (by mostly protecting your password and your account), make proper use of the computing facilities etc. If you have any question about what you should or should not do about computing, Diane will be the best person to ask.

Chapter 12

Acknowledgment

This guide is based on works by many current and previous graduate students and faculty. Its previous version: "Tips for Grad Students in Statistics at Rice" was originally assembled by Keith Baggerly with assistance from Will Wojciechowski, Patrick King and John Dobelman. New contents were added constantly by Blair Christian with assistance from Michael Swartz. This computing guide is greatly expanded by Bo Peng when he works as the helpdesk consultant of the statistics department.

All comments and contributions are appreciated. They should be directed to `helpdesk@stat.rice.edu` during the 2004-2005 school year.

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