

Computing facilities at WPI Computer Science.

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1 Introduction.

KEEP THIS HANDOUT. IT IS USEFUL. READ IT!¹

Hi, my name is Mike Voorhis, I'm the Lab Manager for the CS Department here at WPI. You can reach me by email at system@cs.wpi.edu.² I'm one half of the *systems staff* here at Computer Science, and I'm essentially responsible for every electronic device in the department, with the exception of the photocopier, the coffee maker, and a few refrigerators and microwave ovens.

I'm here to help you if you have a problem with the computer that you've been assigned to use, or if you have trouble with one of the CS Department's UNIX or Domain servers. If you require a software package be installed for some academic purpose (I'll ask you why you want it) that is something I can do, also.

Unpleasant as it is, I think I should also include here a small list of things that it is *not* my job to do. This will avoid us wasting each other's time in the future. It is unpleasant for me to introduce myself to you this way, I agree; however you would be surprised at the number of people that try to have me do their work for them—there are many many grad students here at WPI Computer Science, and only two systems staff members.

- It is not my job to obtain a PC for everyone. I attempt to provide acceptable computing resources (including PC's) for Teaching Assistants, and for the Faculty. Research Assistants are provided with machines by their Advisors.

The department does not have unlimited resources, but if you truly, honestly feel the need for a better computer, you should bring this up with *your advisor*, or if you're a TA, the instructor that you're working for. They are there to help you do your research and your job.

- It is not my job to help you debug programs you write, or to teach you how UNIX and Windows function. There's a chance I might be helpful, but there

¹I know, everyone says this about their handouts, but in this case it is true. For finding the latest copy, see section 1.1

²If you just want to have a conversation though, you can send mail to me personally at mvoorhis@cs.wpi.edu.

are hundreds of Grad Students and only one of me. Plua, you came here to learn, not to have your hands held. The less I help you, the stronger you will become as a student.

If there's a problem with a compiler for instance, preventing you and your fellow students from getting your assigned work or research done, that would be a problem to bring to me. If the mail service, or the webserver isn't running, these are the sort of problems that the systems staff deal with.

1.1 Where to find the latest version of this document.

Many copies of this document are made in mid July of each year, for distribution to new Grad Students in WPICS. The age of this document can be determined by looking at the cover or the last page, where there should be a date indicating when the file was processed. If you have an old version (i.e., more than a few months old), the latest copy can be found at the following web address: <http://www.cs.wpi.edu/Help/>. There should be many other helpful items on that web page.

You can grab a fresh copy of this document by selecting 'Lab Manager's Introduction to Computing Facilities for Grad Students' at the location described above. This wonderful document is available there in Postscript as well as in PDF (i.e., Adobe Acrobat format) for your viewing pleasure. I usually make many last-minute edits in August, so check the version on the web a few times into September, there might be some neat new information there (here).

2 The WPI Computer Science Department.

This section describes the Computer Science department, computers here and the services that are available to you as a Grad Student here. Later on, I will describe the Computing and Communications Center (CCC), which oversees most computer services outside of the CS Department. The CCC also oversees the computer network.

2.1 How to get your computer accounts.

All grad students and faculty of WPI Computer Science are entitled to access to WPICS computing resources and the campus network. This section describes what you need to do to access WPICS resources. Creation of your account will be expedited if you already have a CCC Account (see 4.1.1).

2.1.1 WPICS account types.

Important: There are two separate types of computer account in the CS Department. The first sort is a **UNIX Account**, the second is a **CS Domain Account** (commonly called a ‘PC account’, a ‘CS NT account’, or a ‘Windows account’). UNIX and Domain accounts are different and allow you to do different things. Faculty and Grad Students of WPICS are entitled to both accounts.

2.1.2 Faculty.

For faculty, getting an account is simple—usually I’ve been warned that a faculty member is going to arrive in the department, and I attempt to make the account ahead of time. In our efforts to create an account for you, it is usually very helpful if Human Resources knows of your existence.

2.1.3 Students.

If you’re a student, I’m sorry but there are just too many of you for me to treat you the same way as the faculty. First off: You must be registered and doing course work at WPI. We don’t provide “tourist” accounts as other departments and schools seem to do from time to time. Random people off the street *have* attempted to get free access from us in the past. If you’re not registered, you should be prepared to tell us why you need an account, and it would be very very helpful to you to have an advocate among the faculty.

A student account may be generated easily by going to the WPICS account-request web page (<http://www.cs.wpi.edu/Account>) and entering the requested information.³

³The Account request webpage uses, as of July 2005, a *self-signed* certificate for authentication. Your browser may complain about this certificate, but it *is* legitimate.

Before you get a CS Account, you should first have a CCC Unix account (see section 4.1.1). You will need to know your CCC username (which is the same thing as your WPI email address) to fill out the WPICS request form. Your account will be created as quickly as possible.

Once created, a slip of paper with your account password will be left in the department office (the office staff will help you). If the creation of your account takes more than a few days, **do not fill out an additional request-form**. Ask one of the office staff about the delay, and they will contact us. Multiple requests for the same account will only waste time.

2.1.4 Try not to lose your passwords.

You will receive the same password for both of your accounts (i.e., your CS Unix account as well as your CS Domain Account)⁴. Changing the password on one account **will not** alter the password for the other account, so please don’t lose the original password and then write to us claiming that you forgot the password to the other account, or that we never gave it to you. This wastes your time as well as ours.

If you truly forget your password, you will need to find a member of the System Staff, Jesse Banning or Michael Voorhis, and we will reset your password for you. *Make sure to bring photo identification*, because without that we won’t be sure that you are who you say you are! You wouldn’t want some other person to show up and get *your* password changed, right?

2.2 Once you’ve got your accounts...

This section gives the basics of how to use your CS account. You are Grad Students and we assume that you have a lot of Computer aptitude, so the aim of this document is not to tell you how to login, how to maneuver through the filesystem, create or edit files. You should know how to do these things already. If you don’t know how to navigate a UNIX system there are many books and web sites that can help you. Learning now will not hurt your job prospects.

There are, of course, rules governing the acceptable use of computer facilities here at WPI. These are described

⁴Someday we will do away with the need for two passwords, but it hasn’t happened yet unfortunately.

at <http://www.wpi.edu/+AUP> . Please take a look at this document (yes, I know—yet another thing to read!), to familiarize yourself with these rules. If you violate a rule, you might have your access to computer resources and/or the campus network taken away, and that could make your academic career here really difficult.

2.2.1 Changing your passwords (securely!).

Once you've gotten your account, one of the first things you'll want to do is change the account passwords from the horrible ones we generate for you.

Your UNIX password may be changed by logging into the UNIX machine `cs.wpi.edu` and running the command `passwd`.

There are two ways you can change your Windows password:

- Once again, login to the UNIX machine `cs.wpi.edu`, and run the `smbpasswd` command.
- From your Windows machine, press `ctrl-alt-delete`, and select "password." You can change your password from here.

In changing your password, you should always keep in mind that we would like to keep the department's computers secure. Many people will attempt to break into your account, *including the WPICS systems staff*. So you'll be concerned about...

Picking a Secure Password.

This small section is lifted from the manual page for the "passwd" command, written by Julianne Frances Haugh <jockgrrl@ix.netcom.com> and included in the Slackware-9.1 Linux distribution.

Hints for user passwords

The security of a password depends upon the strength of the encryption algorithm and the size of the key space. The UNIX System encryption method is based on the NBS DES algorithm and is very secure. The size of the key space depends upon the randomness of the password which is selected.

Compromises in password security normally result from careless password selection or handling. For this reason, you should not select

a password which appears in a dictionary or which must be written down. The password should also not be a proper name, your license number, birth date, or street address. Any of these may be used as guesses to violate system security.

Your password must easily remembered so that you will not be forced to write it on a piece of paper. This can be accomplished by appending two small words together and separating each with a special character or digit. For example, Pass

Other methods of construction involve selecting an easily remembered phrase from literature and selecting the first or last letter from each word. An example of this is

Ask not for whom the bell tolls.

which produces

An4wtbt.

You may be reasonably sure few crackers will have included this in their dictionaries. You should, however, select your own methods for constructing passwords and not rely exclusively on the methods given here.

2.2.2 Your CS UNIX account.

Your CS department UNIX account gives you access to the department's collection of UNIX machines, and allows you to send and receive email.⁵ The CS department uses the Linux and Solaris operating systems, primarily. There are many compilers and development packages available on these computers. Your single CS UNIX account gives you access to all of these operating systems.

A list of some UNIX machines which are available to you is provided below (see 2.2.4).

⁵You can also receive email at your CCC unix account. Many people get confused because they don't know that they are accumulating email in two separate places. See the section 'CCC Email' later in this document to find out how to arrange email *forwarding* between accounts—this will make keeping track of your emails much less of a task.

2.2.3 Your CS Domain account.

Your CS Domain account gives you access to the department's Microsoft Windows PCs. It may be possible to use a PC without an domain account, however you will not be able to print documents, which is a pretty common student requirement.

2.2.4 What computers can I use?

Your CS UNIX account gives you access to a group of machines, some of which are public and some of which require additional permissions from their owners. Here is a list of the general-use, main publicly available UNIX machines in WPI Computer Science:

Name	OS	Processor(s)	Memory	Purpose
cs	Linux	1.2GHz Athlon	1Gb	user/mail
csopt2	Linux	Opteron 246	6Gb	compute
csopt3	Linux	Opteron 246	6Gb	compute
csopt4	Linux	Opteron 246	6Gb	compute
newcs	Linux	1.2GHz Athlon	512Mb	compute
q1	Linux	1.2Ghz Athlon	1.5Gb	compute

If it seems that most of the machines listed here are old or slow, it is only because many research groups have their own computing hardware, which is generally faster. For just about all normal applications the hardware we provide to everyone is sufficient. If you're having a serious problem with lack of computing power, please talk to your advisor.

The majority of students and faculty use cs.wpi.edu ("cs" in the table above) for sending and receiving email, editing documents and reports, and doing normal "interactive" work. If you have a project that requires long term usage of the CPU, choose one of the "compute" machines from the table.

Some faculty may be interested in sequoia.wpi.edu, which is very similar to cs.wpi.edu, but is exclusively for Faculty use. Students who are working with certain advisors will gain access to certain limited use machines that are setup for the use of research groups (see section 2.3.3).

Microsoft Windows PC's in the CS Department are attached to the CS Domain. You should be able to login to any of these PC's using your CS Domain Password (see 2.1.1).

Important: PC's in the department *are not backed up*, see section 2.4.1. If your machine ceases to function, we will probably respond by formatting the machine and re-installing all its software.

Some students and faculty will bring their own computers. These people should see section 2.4.2.

2.2.5 Which 'Windows' OS does WPICS use?

WPICS uses **Windows XP Professional** on most of its publicly available Windows PCs. We have recently converted the department's Windows 2000 machines to XP, but some stragglers may still be found running Win2k.

2.2.6 Not enough disk space/compute resources for your project?

When creating large files in your UNIX home directory (as a result of your classwork or research) please keep in mind that there are literally hundreds of other system users out there, and every megabyte you use is one less that they can use. Try to conserve system resources as you work, and everyone will be happier.

Some research projects and classes have special requirements in terms of disk space and/or computing resources, though. You should discuss any anticipated needs first with your professor or advisor. If problems develop, your advisor is there to help. We are here to help you and your advisor.

If your needs cannot be met with publicly available machines in the department, the system staff be able to come up with a solution that will alleviate the problem.

Lastly: When you ask for additional diskspace, keep in mind that the system staff will almost certainly take a look at your current usage. If you're using large amounts of space with pictures of (for instance) your trip to Niagara Falls, or with MP3 files of your favorite music, we might ask you to clear those off, first.

2.3 Reading Mail.

This used to be several separate sections but due to the importance of your ability to communicate, we've tried to consolidate email techniques in one location.

2.3.1 Reading Mail: programs and settings.

Most users here at WPICS use PINE to read their mail directly from their UNIX accounts, however there are a number of MH/EXMH, Emacs-VM, Emacs-RMAIL users and a small number of Eudora and Thunderbird users.

If you read mail using a mail client such as Netscape, Mozilla, Outlook, etc. you should set your mail address to be your username (i.e., the name you use when logging into your PC, or when logging into your UNIX account) followed by “@cs.wpi.edu”.

You can read mail using the POP or IMAP protocols. Your POP mail server, for fetching mail, should be **pop.cs.wpi.edu**. Similarly, if you’re going to use IMAP (which we really do prefer), the server to use for fetching mail should be set to **imap.cs.wpi.edu**. All outgoing mail should be sent out via **smtp.wpi.edu**. Remember to set your sending or “From” email address correctly, or people will not be able to respond to your mail!

Keep in mind that some PC-based mail reading programs will try to copy your mail onto the PC that you use to do your reading. This generally is *not* a good idea, since you might not be able to get to that machine later on. Also, files stored locally on PC’s aren’t usually backed up (see 2.4.1), so you might lose your accumulated email if the PC or its hard drive is damaged.

Some people will use a **.forward**-file to forward all their email to some other location, perhaps off-campus, in their dorm room, or on their apartment’s network. This is fine of course, you may do what you wish with your own email, but you should keep in mind that all WPICS user files and email are backed up every night. Your email might not be as safe elsewhere as it is at WPICS.

See also: section 2.3.5, below, for a discussion of how to deal with SPAM, if this becomes a problem for you.

2.3.2 The CS Grad student mailing list.

The CS Grad Student email list will give you information on activities in the department, and will occasionally provide you with *employment and RA opportunities*⁶ also, so you will really miss out on a few opportunities if you’re not a part of the list.

⁶Free food sometimes, also!

If you are registered for credit at WPI Computer Science (i.e., you’re taking a course, or you’re doing degree work or directed research or anything else that gives you credit as a CS Grad Student), you will be subscribed to the CS grads mailing list automatically. If you have an account in Computer Science (i.e., a “CS Unix” account), your grad-mail will be sent there. If you have only a CCC Unix account, the mail will be sent there.

If you do not have a CCC Unix account, you will not be subscribed to the CS Grad Student email list, and you will miss out on a few opportunities. We will attempt to make sure that all grad students are on the mailing list, but for some, getting here to get an account isn’t easy. Those people can *subscribe* to the mailing list.

Getting a subscription is a simple process, send an email to the address **majordomo@cs.wpi.edu** with a one line message:

```
subscribe grads
```

You do not need to put your email address in the subscription request, if you want the mail to go to the account where you send the subscription-request from. Just send those two words to **majordomo@cs.wpi.edu** and you will be subscribed. If you do provide an email address, as in:

```
subscribe grads addr@your.isp.com
```

This will try to subscribe the email address provided. This is done much more rarely, and usually requires confirmation from the list administrator (to prevent people from subscribing others without their consent).

2.3.3 Research Groups (and their Mailing Lists)!

There are many Research Group mailing lists available, you can subscribe to these simply by substituting the research group’s mailing list-name instead of ‘grads’ in the example above. For instance, to subscribe to the Graph Theory Research Group (GTRG) email list, send a message to **majordomo@cs.wpi.edu** saying ‘subscribe gtrg’.

A list of CS department research groups can be found at <http://www.cs.wpi.edu/Research/>.

You are encouraged to join these lists and become active in a research group (or groups!) which interest you. Be a part of the WPICS community!

WPICS Research Groups hold regular meetings and discuss matters of interest to their particular disciplines. Drop in on a meeting: you might be missing something fascinating.

2.3.4 Other useful mailing lists.

There are many email lists served by WPI Computer Science. Here's a short list of those that you should know about:

faculty@cs.wpi.edu: This mailing list will reach all faculty of the WPI Computer Science Department.

grads@cs.wpi.edu: This mail will reach many WPICS grad students. Please be considerate, and don't send anything unnecessary to the list.

system@cs.wpi.edu: Mail sent here will reach the computer systems staff, who will try to answer your computer-related questions.

office-staff@cs.wpi.edu: Mail sent here will reach the very busy WPICS office staff.

ta@cs.wpi.edu: Grad students who are also TAs.

ra@cs.wpi.edu: Grads who are RAs.

2.3.5 Dealing with SPAM

This section concentrates on UNIX related techniques of regulating SPAM. While the techniques in here will reduce the amount of spam coming into your inbox, they all require some familiarity with various UNIX commands. Editing of configuration files for SpamAssassin as well as PROCMAIL will be necessary. If you remain undaunted by this, then continue. People that use Windows-based mail readers may have access to GUI-based anti-spam measures in any case, as they seem to be getting more popular (finally). Using the antispam techniques in this section in conjunction with Windows-based antispam mailreaders will only result in LESS spam getting through to you.

For now, a quick question:

Are you advertising your email address? People often wonder why it is that they receive as much spam as they do. The spammers need to find your email address *somewhere*, so you should begin your SPAM avoidance strategy by looking around for places where your email address is listed... Is it on your personal web page, for instance? If so, the spammers will eventually harvest it, and add it to one of their lists.

Regulation of SPAM isn't tough. Given a small amount of time, you can free yourself from the hassle of deleting large amounts of spam.

There are two pieces of software that you can use in concert to prevent spam from landing in your INBOX. The two packages are **SpamAssassin** (sometimes referred to as SA) and **PROCMAIL**. We'll discuss their setup here.

SpamAssassin.

SpamAssassin (SA) is a program which looks at a piece of email, its origin and its contents, and runs a number of tests on the email in an attempt to classify it as SPAM or not. More information on SpamAssassin can be found in the man page for SpamAssassin (at a UNIX Shell prompt, type "man spamassassin"), or at the SpamAssassin web site (<http://www.spamassassin.org/>).

SpamAssassin also incorporates the concept of black-and white-listing. This is very important, since there are probably people whose emails you will want to read, even if the messages strongly resemble SPAM.

PROCMAIL.

PROCMAIL is a powerful mail filtering program that allows you to file incoming email messages into separate folders based on contents of the email messages, or based on the presence of patterns in the message headers of the emails. For instance, all emails sent to you with the words "for sale", or "Viagra" in the subject line could be filed into a SPAM folder.

Setup of SA and PROCMAIL.

Follow these steps to get SpamAssassin and PROCMAIL running in your home directory. At some point, we will create a script to automate all of this, but for now, soldier on.

1. Run "spamassassin" and then enter a Control-D to exit. This will create a directory for SA (i.e., SpamAssassin) in your home directory. SA will store its configuration and related files there. If you choose in the future to tweak SA, SA's configuration files are stored in `~/spamassassin/user_prefs`. More on this, later.
2. Copy a preliminary `.procmailrc` file from `~mvoorhis/spamProcmail/.procmailrc` into your home directory. You will need to edit this

file according to your personal preferences. PROCMAIL needs to know two things, really: where you store your mail folders (your MAILDIR) and where your mail-filtering rules are stored (your PMDIR).

The first question—what is the directory where your mail folders stored—is pretty easy. If you use PINE, they will be stored in \$HOME/mail. If you're curious, \$HOME refers to your home directory.

The second question—what is the directory where your PROCMAIL rules are stored—is your own choice. \$HOME/.procmail is a good choice, but you can store the files wherever you want.

3. Copy a preliminary rc.maillists file from `~mvoorhis/spamProcmail/rc.maillists` into the directory you've defined as PMDIR in your .procmailrc file. This file contains the rules PROCMAIL will use in filtering your email. Without this file, SpamAssassin will not be called, and SPAM will not be filtered out of your incoming email stream.

Once the rc.maillists file is installed, you're almost ready to go.

4. Create a .forward file to point incoming emails at PROCMAIL. Yes, the name after the pound-sign is important. A sample .forward file can be found at `~mvoorhis/spamProcmail/.forward`. You can copy this file and replace the words "YOUR-USERNAME" with your username (your username is the name you type to login to the computer you receive mail on).

Possible pitfall: Installing the .forward file is the event that will start the filtering. Make sure that neither your .forward file nor your home directory is *group or globally writable*. If either of these two are writable by anyone other than you, the .forward file will be ignored.

You can ensure your files are sufficiently protected by typing the command: `chmod go-w ~/~/forward`. If your .forward file is writable by anyone other than yourself, the forwarding will not work, and your spam filtering will of course fail as well, since this whole scheme depends on use of your .forward file.

If you use the standard three files found in the `~mvoorhis/spamProcmail` directory, potential SPAM will be stored in your MAILDIR (see your .procmailrc for the definition of your MAILDIR), in a file called IN.spam-maybe. There will be a few other IN.* folders as well.

And **yes, I know that the above procedure is lengthy**. As I said earlier, we are working on a script that will automate this process for you, so that you needn't worry about going through the steps.

Having Problems?

If there are problems (you find that you aren't receiving emails, mails aren't being filed properly, etc.) the fastest way to return your mail processing to its previous state is to rename your .forward file, using the following two commands:

```
cd
mv .forward not-forward
```

Once the .forward file is renamed or no longer exists, the mechanism of filtering will be disabled. You can look in the PROCMAIL logfile (found in PMDIR as defined in your .procmailrc file) for a description of what may have gone wrong.

Tuning and Extras

- Tuning of SA may be done with the whitelist and blacklist commands in Spam Assassin. I suggest that people at WPI whitelist all emails coming from inside of WPI. This is done by entering the following two lines into your SA "user_prefs" file, (which is found in your .spamassassin directory):

```
whitelist_from *WPI.EDU
whitelist_from *wpi.edu
```

- Procmail logfile: keeping it switched on allows collection of statistics if one is interested. Flip-side is that the logfile will become large, over time.

2.3.6 Email etiquette.

This section will describe the polite use of email, with the objective of not angering the constituents of large mailing lists, (i.e., Don't send files via email, don't forward

hoax email, check CC-lists before replying, use appropriate subject lines).

Consider the ancient adage: do unto others as you would have them do unto you. Think twice (or three times) before you send something crazy via email.

2.4 The computer or terminal in your office.

If you're lucky enough to have your own office, it will have a number of machines in it most likely. I have tried over this past summer to supply as many offices as possible with fresh PC's. Some older machines remain⁷. This small section will describe use of these machines.

2.4.1 Office PCs.

Office PCs in WPI Computer Science all have certain software installed. This software will vary with where the machine is, but it is safe to assume that an office PC will come with Mozilla and Microsoft Office, and possibly Microsoft Visual Studio.

In order to use printers you need to login to the CS Department's Domain server. See section 2.1 for technique on how to get an CS Domain account. Normally Domain accounts are provided along with your CS Department UNIX account.

You may connect to CS Department UNIX machines using either the 'PuTTY SSH' program which is located on the desktop, or 'TeraTerm SSH'. Please use these package to connect to WPICS UNIX machines from your PC, as they communicate using encryption. Using 'telnet' from your PC will result in your password being transmitted on the network in clear-text, which is not good at all.

Additionally, you may start an X Session (i.e., a graphical UNIX session, like that provided by an X-Terminal) by clicking on the "CS XDM" icon on your desktop.⁸

Files you create on office PCs are not backed up. Be careful. If you mistakenly delete your thesis, for example, and your office PC was the only place it was stored, you will be a very unhappy person. Take care to make backups of your important work. CDROMs cost less than a

⁷A vanishingly small number of old X terminals may also exist, hidden away in corners, probably switched off and stacked on a bookshelf.

⁸A discussion of UNIX window managers should get inserted in here at some point.

dollar. When compared to the cost of another semester's registration, making backups of your own doesn't seem like a bad idea.

A safe place to keep files is on the department's *Samba server*, which is backed up on a nightly basis. Once you've logged onto the CS Department's Domain Server, you will be able to connect your UNIX Home Directory to your PC as a Network Drive. See section 2.7 for information on restoring files in UNIX.

2.4.2 I have my own PC/Notebook/Computer. What do I do?

Some students and faculty bring their personal computers (notebook computers, almost always) and want to use them, either instead of or in addition to the machines that are provided by the department.

Getting a machine working in WPICS and on the Campus Network requires special attention. Please don't expect to walk in off the street, plug your machine into the network, and have access. If you desire wireless access, that's even more complex to arrange. Please contact us (system@cs.wpi.edu) and ask about this.

If you'd like send and receive WPICS email from your notebook, please see section 2.3.1.

2.4.3 Using SAMBA to reach your CS-UNIX Home Directory from your PC.

If you want a good, safe place to put your important files, so that they aren't stored on your office PC, consider using the department's **Samba server**. This server allows you to mount (i.e., access) your UNIX home directory from your PC, so that you can read and write files there instead of on the local machine.

To access the samba server, you need to be logged into the CS Department's Domain Server, which of course means you need a Domain Account (see section 2.1).

When you login to a CS department PC, your UNIX home directory should be mounted automatically for you as the **M:** drive. If it is not, or if you disconnected that drive, you can remount it from Windows Explorer by using the "Map Network Drive" option from the Tools menu. The name of the drive you should map is:

```
\\rav2\[your username]
```

You should of course replace “[your username]” with the name that you use when you login to the Windows machine.

2.4.4 Secure protocols: ssh, scp, and sftp (or: ‘why can’t I telnet’).

WPI has stopped, as of August 2003, use of insecure, un-encrypted communications protocols like **telnet** and **ftp**. These methods of connecting and transferring files send their data in an un-encrypted format across the network, which might allow others to see the data you send back and forth.

In order to preserve your privacy and make life tougher for eavesdroppers, you should now use **ssh**, **scp**, and **sftp** to accomplish what you previously accomplished with telnet and ftp.

- Instead of using telnet from WPI UNIX machines, please use either **ssh** or **slogin**. These will work in the same way as telnet, and will be much much more secure.
- When you’re using a PC, instead of telnet, you should use either **TeraTerm SSH** or **PuTTY** on your PC. Both should be available from the desktop of a WPICS PC; PuTTY is a more up-to-date implementation of SSH.
- Instead of using ftp from WPI UNIX machines, use either **scp** or **sftp**. For copying individual files, scp might be a better choice, but if you’re very familiar with old fashioned ftp, use sftp as it is almost precisely the same in usage.
- From a PC, instead of FTP, give **WinSCP** a try. It has a great Graphical user interface and you can move files from machine to machine with a nifty “drag and drop” interface.

2.4.5 Don’t install new operating systems on your PC.

Please, *do not* install Windows XP or any other operating system onto a Lab machine. If you do this, we will decide that you’re knowledgeable enough to take care of the machine, its contents, and (specifically) its problems. If you

install a new OS on your office PC and then come to us asking for help with a mysterious problem, our reaction will probably be to rebuild the PC, which will probably result in you losing your data.

We will re-image the machine, and the time you spent installing whatever it is you installed, will be wasted.

2.5 Printing.

The CS department allows free use of its printers to CS UNIX and CS Domain account holders. Printing is free, but this should *not* be misunderstood as giving you permission to use large amounts of paper. Specifically, the printing of large papers, books, and manuals on CS department printers is *forbidden*, unless you have permission from your advisor to print these large documents.

2.5.1 Printing from a Windows PC.

From a PC, printing is simple provided you have a CS Domain account (see section 2.1). Simply use the printing option built into whatever PC package you are running. You will need to select the printer to send your document to, of course: The locations of various printers, and their accessibility, are described below.

2.5.2 Printing from UNIX.

From UNIX, printing options are more diverse. There are many packages, and only some of them have built-in menu options for printing.

Generally if there is a program that you use to view a certain type of file (PDF/Acrobat, for instance), the program you use to view the file can also be used to print that file to a printer.

If you do not have a previewing program, the printers in WPI Computer Science can directly accept (via the ‘lpr’ command, see below) plain-text (ASCII text) and PostScript files for printing only. All other formats will need to be converted to Text or PostScript. This means that if you want to print a picture (for instance a GIF or JPEG file), that file will need to be converted. Use an image viewing program such as **xv** to print pictures, it will convert the picture to PostScript automatically.

The general command for printing a file from UNIX is:

```
lpr -Pprinter filename
```

Where *printer* is one of the printers named in the next section, and *filename* is, of course, the name of the file you want printed.

2.5.3 Names and Locations of Printers.

Here's a list of CS Department printers, their capabilities, locations, and accessibility.

ps1 In the CS department office. This is a black and white duplex capable laser-printer. Note that the CS Department office is closed on weekends and after 5:00pm on weekdays, and you will not be able to get in to pickup printouts.

ps2 In room 142. You will have a key providing you with access to this printer. It is higher resolution than ps1, black and white and also duplex-capable.

ps3 This printer is located in the Subbasement of Fuller labs, in room a22. It is for the use of the students in Fuller a22.

psc This is a color Laser printer in the CS department office. It can print to overhead transparencies from Microsoft Power Point. Like ps1, is only accessible when the CS Department Office is open, so don't print things here on the weekend and expect to be able to pick them up—you won't be able to reach the printer.

pscsannex This printer is located in the Gordon Library "CS Annex" area. You have access to this printer also. It is in all ways the same as ps2, described above. Please don't send print jobs to this printer unless you're in the Gordon Library area.

Other printers exist at the CCC for your use, but CCC **will charge you** to use those printers. We do keep accounting of who prints what, so please don't abuse your printer privileges: we will find you and you'll end up paying for your printing. Students have attempted to print *large books* out on our printers before; If you do this we won't be happy. See section 2.5.5, below.

2.5.4 My printer is out of paper!

If there is no paper in the printer, you can do the system staff a favor by going to Fuller 242 and getting some paper, and then putting that paper into the printer. The system staff as well as many of your fellow students will thank you.

2.5.5 Printer etiquette.

The printers in the CS Department are shared by several hundred people. Please think before printing something. Do you really need a hard copy of what you're printing? Are you only going to read the printout once? Is it more than 10 pages or so? If so, please consider reading it online if possible.

Over the years the system staff have seen many many printouts sit unclaimed by the printer, some of them quite long. People had printed a document and it wasn't even important enough to them to come to the printer and pick up their output. Students have even attempted to print entire books on our printers so that they wouldn't need to spend the money to buy them.

The bottom line? Please remember that many other people also use the printer, and try to keep your usage of this shared resource to a minimum, to keep everyone happy.

2.6 Using the web.

This section, when I have time to actually *complete* it, will describe how to create a webpage in your WPICS Home directory.

For the time being, take a look at:

<http://www.wpi.edu/+Helpdesk/Unix/Webdev/creating.html>

For a general description. Most of what is written there will be applicable to WPICS, **but not all of it**. Specifically, WPICS doesn't allow nearly so much in terms of CGI support, PHP, and the like. If you really feel the need to have a lot of CGI or PHP support from the webserver, feel free to use the CCC's webserver for your personal project.

2.7 Lost or deleted files by mistake?

UNIX doesn't have the convenient 'undelete' or 'waste-basket' feature that is a part of most Windows operating systems. The contents of your UNIX account are backed up to tape every night at some late hour, usually between 23.30 and 03.00. If you delete a file by mistake, send an email to system@cs.wpi.edu and we will restore the latest copy of your file that we have. Much if not all of the user space on general-use WPICS machines is backed up (we don't backup /tmp space, though).

Note well: If you have a personal UNIX machine, for your own exclusive use, the files on that machine are most likely *not backed up*. If you administer the machine, chances are very good that the WPICS systems staff do not backup the files there, and you will be responsible for backups.

Files on non-UNIX PCs used by students in WPICS are *NOT*, for the most part, backed up. For your own sake, *please* take care to keep your own safe copies of your important documents, your homeworks, and the like. If you prefer, you can access your UNIX home directory via samba (see more on this above), and save your files there, where they will be backed up.

2.8 The CS Annex.

The CS Annex, on the bottom-most floor of the Gordon Library, contains a number of PCs with Development and Office software (i.e., Microsoft Office, MS Visual Studio, Mozilla, Internet Explorer), as well as a printer. If you don't have an office of your own like TAs and RAs, you can use this room.

The CS Annex can *not* be reached via the main entrance to the Gordon Library. You must go down the stairs which are next to the library on its south side, and then up the short flight of steps and in the door. There will be a keycard lock on the door and your student ID Card will provide you with access to the building.

2.8.1 Keycard Locks.

You may find that, late one night, you can't get into the CS Annex, because the card reader on the door won't let you in. Please let us know when this happens. All CS

Grad Students should have access to the CS Annex, and if you don't, something is definitely wrong.

We will ask you for your Student ID Number, and will relay that information to the locksmith, who will program your name into the keycard lock. This process takes some time unfortunately, so the sooner you tell us, the better.

2.9 Security.

Be careful with your account. Possibly the most useful contribution to the Department's security you can make is also one of the simplest things to do: **close doors to unused rooms**, and if you're the last one out of a room, please take the time to close the door behind you. This will cut down on opportunity-thefts and will prevent us from having to spend hours looking through videotapes for thieves. There are several thousand other students and people on the WPI Campus, and not all of them can be counted upon to be responsible.

If you give your account password to some other person and I find out about it, or if I am able to crack your password (and I *will definitely* try to crack it!) I will close your account and you will need to come and see me, in person, with identification, to get your account re-enabled. This will be troublesome for you—I'm easy to reach via email but can be pretty tough to find in person. Don't give access to WPICS systems to non-CS people. There are hundreds of users on WPICS computers, please try to think of their welfare as well as that of your own. See section 2.2.1 for pointers on how to pick a secure password.

2.10 WPICS Course support, mailing lists, and TURNIN.

At the beginning of the term and semester, the system staff create new mailing lists for each class. Information on these mailing lists is usually mailed out to the faculty at the beginning of the term or semester.

Data from the Registrar is (are) used to create the mailing lists, and in general students need not subscribe themselves to the class mailing lists, *if they have a CCC account*.

If you do *not* have a CCC account, there is no way for me to know what your email address is for the mailing lists. You will need to subscribe to the class mailing list. All undergraduates are provided with a CCC account

during the registration process, so lack of subscription to class mailing lists is almost always a problem for grad students without accounts.

Likewise, registration data is used to create lists for use with the TURNIN program, an electronic homework submission program. As with the mailing lists, if a student doesn't have a CCC account, that student will *not* be added automatically to any class lists!

3 CS and WPI Student Groups.

3.1 I've got questions, who has answers?

If you're a new student here at WPI, you surely have many questions. Here's a brief list of very useful websites at WPI, where the questions of new students may be answered:

<http://www.cs.wpi.edu/Help/> This site has many items in a list. Among the first few is "Information for New CS Graduate Students." Give that one a look!

<http://grad.wpi.edu/Admissions/Accepted/> This is the WPI Grad Admissions site for accepted grad students. It has a lot of useful information.

<http://www.cs.wpi.edu/~csgso> This is the home page for the WPI Computer Science Grad Student Organization. It will have the best information for new WPI CS Grad Students!

<http://users.wpi.edu/~gso/> This is the home page for WPI's Graduate Student Organization.

If you're coming to WPI from another country, you may be able to get help from a student organization of your fellow countrymen. Take a look in <http://www.wpi.edu/Admin/SAO/Orgs/alpha.html> and see if there is a student organization that fits your needs.

The rest of this section will list student groups that may be able to answer your questions face to face.

3.2 The CS Grad Student Organization.

Take a look at the CS GSO webpage, which may be found at <http://www.cs.wpi.edu/csgso/>. There is a great supply

of useful information there for Grad Students. The webpages there are written by grad students, and the point of view may be more realistic to you than my dry presentation of rules and data here.

While we're here, I should mention that the CS GSO is yet another opportunity for you to take an active role in the WPICS community. If you're interested in being an advocate for your fellow students, or helping out your fellow Grad Students, write to the CSGSO at csgso@cs.wpi.edu.

3.3 The ACM (Association for Computing Machinery).

More here later. For now, go and check out their website, at <http://www.acm.wpi.edu/>.

3.4 The GDC (Game Development Club).

More here later (is there an echo in here?). For now, go and check out their website, at <http://gdc.wpi.edu/>.

4 Other departments at WPI.

4.1 The Computing and Communications Center (CCC).

The CCC Helpdesk's extensive website is located at the URL <http://www.wpi.edu/Academics/CCC/Help/>. There is a large amount of CCC-related information at this website for your use. Go there and look for the answer to your questions if possible, before going to the CCC people to ask for help.

4.1.1 How to get a CCC UNIX account.

You can get an account on CCC systems by going to the main CCC lab, on the 2nd floor of Fuller labs by the entrance, and asking for an account there. You will need a student ID card, if you don't have one of those you probably won't end up with an account.

As of (at least) late 2002, it is possible now to **apply for a WPI CCC Unix account via the Web**, by going to <http://www.wpi.edu/Academics/CCC/accounts.html>. You will need a PIN code from the Registrar's office, before you can use this page to create an account.

4.1.2 CCC Email.

Caution, *CCC may have changed their email since this section was written. Please check the CCC Helpdesk website for the final word on all CCC email related procedures.*

Your CCC UNIX account is another place where you can receive email. Mail sent to you at CCC will not automatically appear at your CS Department UNIX account, so if you don't want to have to check email at two separate places, you should have your email forwarded from one of the two accounts to the other.

You can do this by creating a file named `.forward` (note the dot before the word 'forward'—it *is* important).

This file should contain one line of text: the email address of the other account where you would like all the email to go. So, if you want to read all of your email at WPI CS, you should create a `.forward` file on the CCC UNIX machines that contains the text:

```
username@cs.wpi.edu
```

where 'username' is your username on the CS UNIX systems. If you'd like to use CCC systems to read all your email, then create the `.forward` file on your CS UNIX account, and put

```
username@wpi.edu
```

in the `.forward` file, where 'username' is your username on the CCC UNIX system.

4.1.3 Restoring lost files on CCC UNIX machines.

See the website:

```
http://www.wpi.edu/+CCC/Help/Unix/snapshots.html
```

CCC doesn't currently (February 2003) appear backup user mail inboxes (i.e., `/var/spool/mail/[username]` files, POP/IMAP inboxes and the like, outside of your home directory).

Email stored in your home directory will be backed up along with the other files you keep there.

4.2 The Academic Technology Center (ATC)

Note: The ATC was for a long time known as the **Instructional media Center**, or IMC. Some people will continue to refer to the ATC as the IMC.

The ATC's website is located on WPI's main web-server, at <http://www.wpi.edu/+ATC>.

One of the services provided by the ATC is that they will loan you a notebook computer if you need to use one, or a projector if you need to give a talk or presentation someplace. See <http://www.wpi.edu/+ATC/Equipment/> if you're curious.

5 Where to go for Help.

There are many people here in WPICS (and at WPI in General) to help you. I will concentrate mostly on Computer related help, of course.

- If you need help with Computer Science related computers, you can try looking in the CS Department Web pages (<http://www.cs.wpi.edu/Help/>), or you can email system@cs.wpi.edu.
- If you're having trouble with CCC systems, or with computer equipment that is not owned by the CS department, you can look at the CCC Help Desk website, which is located at <http://www.wpi.edu/Academics/CCC/Help/>. If the website does not help you, you can send mail to helpdesk@wpi.edu and ask them a question.

Other potentially useful mailing lists are described in section 2.3.4.

6 Where the Labs Are.

- CCC Labs are described on another webpage, which is at <http://www.WPI.EDU/Academics/CCC/Labs/>.
- Some WPICS Department Research groups, have their own Computer Labs. These are described at the web address <http://www.cs.wpi.edu/Research/>.
- There is only one publicly available lab now for CS Department Grad Students who do not have access to a Research Lab. That is the Grad Projects lab, which is in the Gordon Library (see 'Grad Projects Lab,' above).

7 Your feedback would be appreciated!

Thanks for reading the whole handout! This is a very young document, created by a busy guy in a very short amount of time, and it contains, without a doubt, many mistakes. If you think that it is lacking some useful piece of information, *tell us!*⁹ Even if we've only made a spelling mistake, we would love to hear from you.

Without constructive feedback, this document will remain static, and others might not be exposed to the information that you think should be here.

This L^AT_EX-file was processed August 9, 2005.

⁹You can email me at mvoorhis@cs.wpi.edu and tell me you have a suggestion for the Grad Student intro handout. I'm always looking for constructive criticism of this document, as any improvements will help future students.