How to Login to the Computer

In this exercise you will learn how to "log in" to the computer. You will also set up your computer account, including setting a password for your account and copying certain startup files to your home directory.

(You should go through this exercise even if you already know how to log in to a Unix computer, because it will also show you how you can customize your Unix account for this course.)

1. Introduction

The computer you will use for this class is a Unix workstation. It is more powerful than a simple personal computer (like a Mac or PC). When you use a personal computer you can just turn it on, wait for it to "boot up," and then begin working. But when you use a bigger computer, such as a Unix workstation or mainframe computer, you have to "log in" first. You can use these more powerful computers either *locally* from the computer console (sitting directly in front of the computer), or *remotely* over the campus computer network (or even via the Internet from off campus). If you have a Mac or PC in your dorm room then you can use it to connect to the remote computer from there, without having to leave the building.

Logging in accomplishes two important things. First, if you are going to be using the computer remotely (over a network) then you first have to establish a connection over the network from the computer or terminal you are using locally to the one you are using remotely. Second, whether you are using the computer remotely or locally, "logging in" identifies you as a valid user of the computer and sets things up the way you want them to be to make your work easier.

There are several parts of this lesson. First you will learn how to log in, then you will customize your computer account, then you will learn how to log out. You must log out of the computer when you are done—you should not just walk away. Even if you turn off the Mac or PC you are using to connect to the Unix computer, there can still be an open connection on the Unix computer unless you give the command to log off.

2.   How to Log in

There are a variety of ways you can log in to a Unix workstation at Vassar. You can log in directly on a workstation in the Physics department computing lab or in the Computer Science department computing lab (if you have an account there). Or you can connect to a Unix workstation from a Mac or Windows PC from another campus computing site, or you can connect from your own computer in your dorm.

   You will know that you have successfully logged on to the computer when you see something like this on your screen:

```
Last login: Thu Jan 23 13:14:05 2003 from 143.229.67.53
                    Welcome to the Vassar College
                         LIGO GRID PROJECT
                       Authorized use only!
```

   Select the sub-section below that applies to your situation, and when you have logged in go on to Section **@Sect.Custom@**.

2.1. Logging in from the Console

If you are seated at the computer console you need only enter your userid (which you obtain from your instructor) and then enter your password, as requested on the login screen. If you enter an incorrect userid or password the box will shake or the terminal will beep and you will have to start over. When you enter the right username and password you will be logged in. Depending on the windowing system in use you may or may not see a login message similar to that above.

2.2. Logging in from a Windows PC

To log on to the workstation via the network from a Windows PC you need a terminal emulation program which supports the SSH ("Secure Shell") protocol. The simplest of these is a program called PuTTY. You can download PuTTY from a link provided on the list of Exercises. Simply click on the link for "`putty.exe`" (you may have to scroll down the page to find it) and have the file saved to your desktop. (If you have troubles clicking on the link directly then right-clicking will let you download the file; Select "Save Target As..." for Internet Explorer or "Save Link As..." for Netscape.)

   It is useful to configure PuTTY to remember the same settings every time you connect to a particular computer. To do so, launch the program (double-click) and fill in the forms as follows:

Host Name	The name or IP address of the computer you wish to connect to. For this course enter the name `noether.vassar.edu`.
Protocol	Select SSH. The port number should change to 22. Due to security concerns you should not use telnet.
Saved Sessions	Enter a session name (a "nick-name") for your settings and press "Save" to save them under that name. For example you might name your session "noether". You can then select a session and press the "Load" button to have the stored session automatically loaded.
Window→ Appearance	You can change the font face and size here, to make the screen more readable.
Connection→ SSH	Set the Preferred SSH protocol version to 2. Due to security concerns you should no longer use version 1.

When you have these set, don't forget to press "Save" to save them under a session name before you go on to complete your connection. You only have to save your session settings once. After that you can quickly reload them with the "Load" button.

When you press the "Open" button you will be connected to the computer named in the Host Name window.

The first time you connect to a new machine using SSH you will be asked to verify that it really is the machine you think it is. The message looks something like this:

```
The server's host key is not cached in the registry. You
have no guarantee that the server is the computer you think it is.
The server's key fingerprint is:
53:83:b7:3f:49:52:b4:63:4a:63:bb:df:77:8a:ca:bb.
If you trust this host, hit Yes to add the key to
PuTTY's cache and carry on connecting.
If you want to carry on connecting just once, without
adding the key to the cache, hit No.
If you do not trust this hosts, hit Cancel to abandon the connection.
```

As long as you trust that you really are connecting to `noether.vassar.edu`, hit the "Yes" button. You should only have to do this the first time you connect to a new computer.

Next you will be prompted for your username on the remote host and your password:

```
login as:  mavassar
sent username "mavassar"
mavassar@noether.vassar.edu's password:  your-password
```

When you enter the correct password you will be logged in.

2.3. Logging in from Mac OS X

MacOS X is based on Unix, so it is easy to open a terminal window and then connect to the course workstation using ssh. The first time you start the Terminal Application you will have to find it at "Macintosh HD → Applications → Utilities → Terminal". Double click on it to launch it.

Once the Terminal application is running you can hold down the control key while clicking on the terminal icon in the dock. This will give you a menu from which you should select "Keep in Dock". Then the Terminal application will always be available in the Dock, and you just have to click on it (once) to launch it again. (You only have to select "Keep in Dock" once. Otherwise, you can always find the Terminal application in the Utilities folder.)

When the Terminal application is running you will have a Unix command prompt on the local machine (the Mac). Enter the following command to connect to the workstation being used for the Fortran course.

```
%  ssh mavassar@noether.vassar.edu
```

The "%" represents the command prompt, so you don't type it. Just type the command after it, with your own userid in place of "mavassar". From here onward it is the same as if you were connecting from any remote Unix workstation, as described in Section **@Sect.Network@** below.

2.4. Logging in over the Network using ssh

To connect from a Unix computer to another Unix computer over the network you will have to use the SSH ("Secure Shell") protocol. Older computers would allow you to use the "telnet" protocol, but telnet has known security flaws and so is no longer allowed.

To connect to the workstation being used for the Fortran course enter the command:

```
%  ssh mavassar@noether.vassar.edu
```

The "% " represents the Unix command prompt on the local machine, so you don't type it. Just type the command after it, with your own username in place of "mavassar".

The first time you connect to a new machine via SSH you will be asked to verify that it really is the machine you think it is. The message looks something like this:

```
%  ssh mavassar@noether.vassar.edu
The authenticity of host 'noether.vassar.edu (143.229.45.74)' can't be
established.
RSA key fingerprint is 53:83:b7:3f:49:52:b4:63:4a:63:bb:df:77:8a:ca:bb.
Are you sure you want to continue connecting (yes/no)? yes
```

You will only be asked once if you trust this machine. If you say 'yes' then ssh will remember the unique host fingerprint and alert you if it ever changes (which might be due to someone trying to impersonate that machine).

```
Warning: Permanently added 'noether.vassar.edu,143.229.45.74' (RSA)
to the list
```

You will next be asked for your password. When you give the correct password you will be logged in and should see a login message like that shown on page **@pg.login@**.

3. Unix Customization

The first time you log in to the class workstation you should customize your Unix environment by performing the following steps:

1. If you have not done so already, set a password. The command to do so on any Unix computer is "**passwd**". At the Unix prompt (which we will write as "% ", though it might be something like "**noether>** ") you should type **passwd**, and then enter your old and new passwords, like so:

```
%  passwd
Old Password: old-password
New Password: new-passwd
Retype new password: new-passwd
%
```

   If you don't have an old password you can simply hit the Return key. The passwords, both old and new, don't show up on the screen. You must type the new password twice, to make sure that you really type it correctly. The next time you log in you will have to give this new password or you will be denied access to your account. In choosing a password you should try to follow the guidelines in the document "*How to Choose a Bad Password*" which is distributed with this exercise.

2. Next you will copy some Unix initialization files from your instructor's `fortran`
   subdirectory. The Unix command to copy a file is '`cp`', followed by the name of
   the file(s) to copy, followed by the name of the file or directory to be copied to.

   Before you copy over important files in your home directory it is a good idea
   to make backup copies, in case you some day need to put the originals back.
   You should type the following Unix commands to make backup copies of these
   important files

   ```
   %  cp .login .login.bak
   %  cp .cshrc .cshrc.bak
   ```

   (Remember, the "% " represents the Unix command prompt, so you don't type
   it. Just type the command part starting with "cp".) If for some reason the files
   `.login` and `.cshrc` don't already exist then don't worry about it.

   Next, assuming that your instructor's home directory is `~myers/`, the subdi-
   rectory in which the files you want to copy are to be found is `~myers/fortran/`.
   (Your own home directory can be referred to as "`~/`".) At the Unix prompt you
   should therefore give the following commands:

   ```
   %  cp ~myers/fortran/sample.login ~/.login
   %  cp ~myers/fortran/sample.cshrc ~/.cshrc
   %  cp ~myers/fortran/sample.emacs ~/.emacs
   %  cp ~myers/fortran/sample.logout ~/.logout
   ```

   (If you are not at Vassar or if you have a different instructor then you should
   refer to your instructor's home directory in place of `~myers/`.) If you don't have
   an instructor who has these files for you to copy then you can download them
   from the course web pages.

   The file `.login` in your home directory contains commands which are read
   and executed every time you log in. The file `.cshrc` contains commands which
   are read and executed every time you start a new command "shell". The file
   `.emacs` contains commands which are read and executed every time you run the
   emacs editor. Finally, the `.logout` file contains commands which are executed
   whenever you log out of the computer.

3. If you want to check to see if you copied these files correctly, or just to see what
   files you already have in your directory, the command to list files in Unix is '`ls`'.
   Giving this command in your home directory yields something like:
   ```
   %  ls
   bin/        Mail/
   %
   ```

The "/" is not a part of the name of a file, it just indicates that these are actually directories. But you won't see the files you just copied, because by default Unix does not list files or directories which begin with a dot (as is the case for all of the startup files you just copied). To list _all_ files, even those beginning with a dot, the command is 'ls -a'. This will show you something like this:

```
%  ls  -a
./              .kde/           .mwmrc
../             .kderc          .newsrc
.bash_logout    .login*         .pinerc
.bash_profile   .logout         .screenrc
.bashrc         .MacXdefaults   .tcshrc
bin/            .MacXrc         .twmrc
.cshrc*         Mail/           .wastebasket@
.dir_colors     .mailcap        .x11start
.emacs*         .mailrc         .Xdefaults
.garbage.bin/   .mushrc         .xinitrc
```

As you can see, there are several of these "hidden" files in your home directory.

The behavior of many Unix commands can be modified by adding such "flags" or "switches" on the command line after the command name. Flags or switches always begin with a dash, and you must leave at least one space around them. As another example, you can get a longer and more detailed listing of files with the commands 'ls -l' or 'ls -la'. Try it!

You can also use the 'ls' command to see which files are in other directories. To look in your instructor's fortran directory the command is

```
%  ls  ~myers/fortran
```

To look in your instructor's home directory the command is just

```
%  ls  ~myers
```

You can try to list the files in your instructor's mail subdirectory, ~myers/Mail, but you won't be able to, because that directory is protected. In a later lesson you will learn you how you can use the 'chmod' command to protect your own files so that nobody else can read them.

4. If you want to see what is inside a file there are several ways to do so. The simplest is to give the 'cat' command, followed by the name of the file you wish to see (all on the same line). The name "cat" is short for "concatenate," because this command can be used to join several files together. To see what is in the .login file simply type

```
%  cat .login
```

If the file is longer than 24 lines (as this one is) then the first part of the file will have scrolled off the top of the screen. A better way to look at a file is with the 'more' command. Replace 'cat' with the 'more' command,

```
%  more .login
```

and the display will stop after the first 24 lines of the file are on the screen, and the word "more" will appear at the bottom of the screen. If you press the space bar you will get the next screen-full of the file, and so on until you get to the end of the file. Press "Enter" to scroll down one line at a time, or press "d" to scroll down by half a screen at a time.

4. Logging out

When you are done using the computer you should log off. If you are logged in over the network, the command is simply 'logout', like so:

```
%  logout
Goodbye, mavassar
logout from noether.vassar.edu at Thu Jan 23 19:45:58 EST 2003
Vassar College Department of Physics and Astronomy
Connection closed by foreign host.
```

If you are logged in to a workstation on the console you may instead have to find the right button or menu item to click. Try clicking in the background to pull up a menu, and look for the "exit" item or something similar at the bottom of the menu.

5. Summary

- To log in to the Unix computer remotely over the network you need to run the 'ssh' program or something similar (like PuTTY for Windows).

- You have used or at least seen the following Unix commands:
    - passwd — change your password
    - cp — copy a file
    - ls — list files
    - cat — output contents of a file (or files)
    - more — output contents of a file one page at a time
    - logout — log out of the computer

- Don't forget to 'logout' when you are done.