

Intro to UNIX

Course Description: This is an introduction to the UNIX operating system. Topics covered include how to log in, files and directories, and using basic UNIX commands.

Prerequisites: UNIX shell account recommended (not a UCLink4 account).

This document has been prepared for you by W&MF staff so that you can familiarize yourself with the basics of the UNIX operating system. This document is meant to serve as a future reference for you – covering from the very basic to the fairly detailed. Not all the information mentioned in this document will be covered in the *Intro to UNIX* class.

WHAT IS UNIX?

Unix is an operating system that allows a user and a computer to interact. Initially developed at Bell Laboratories in the early 1970's, we (yes, the University of California Berkeley) made many enhancements to the program and our version of UNIX began to diverge from the Bell Labs version. Today, there are many different versions of UNIX. UNIX is a general, multi-tasking, multi-user, interactive operating system.

The UNIX system uses a prompt to tell you it is ready to accept your next command. You must always finish a command by hitting return (or enter). This is similar to a prompt you would see if you were using DOS on a PC/IBM machine. The prompt in UNIX is usually your email address or the machine name, followed by the number of times you've seen the prompt during your current session.

An important note on UNIX: it is case sensitive!! This means that when logging in, your password may be "g0be8rs" but if you type in "G0BE8RS" UNIX will not recognize it as correct.

What is the UNIX environment like?

UNIX saves everything in files and directories. If you're familiar with Windows or DOS, you'll be happy to know that UNIX works almost exactly the same as Windows and DOS when it comes to files and directories.

A *file* is a bunch of information stored together, like all the characters you typed for your paper for Under Water Basket Weaving 112C.

A *directory* is a container for files (equivalent to a folder for Windows 95 or Mac gurus). The computer organizes the files like a file cabinet, with different drawers, folders, and also files within the folders. Just imagine if you worked in an office where everyone threw their work in one big pile in the corner!! With file cabinets (and the file/directory structure in UNIX) we don't have that problem!

GETTING STARTED

At U.C. Berkeley, some of the hosts which have UNIX are nature, violet, socrates, cafe, ocf, or math. You must have an account, which consists of a username and password, to use the system. For example, if your account is on cal.berkeley.edu & your login is oski, (your email address oski@cal.berkeley.edu) then you would **telnet cal.berkeley.edu** and see something like this:

```

Connected to cal.berkeley.edu.
Escape character is '^]'.
UNIX(r) System V Release 4.0 (cal.berkeley.edu)
login: oski
Password:

```

Once logged in then you may see some system messages, lists of previous mail, and then something like:

```
TERM = (vt100)
```

All you have to do is press **return** (or enter, they do the same thing). This lets UNIX know the kind of machine you're working on... sort of like realizing the appropriate language in which to communicate. Then, you'll be dumped to your UNIX prompt (oh joy! oh bliss!).

USING UNIX

You interact with UNIX by typing commands at the UNIX prompt. Don't forget UNIX is case sensitive. Following is a list of some basic commands that are very useful in UNIX. Usually they pretty closely (but not always) represent an English word.

I. DIRECTORIES & FILE MANIPULATION:

- | | |
|--------------|--|
| 1. ls | List files in your directory |
| options: | |
| -a | all, includes dot files |
| -F | indicate flag (/ * @): |
| / | directory |
| * | executable |
| @ | symbolic link |
| -l | long format includes size and permissions of files |
| -R | recursive, lists contents of sub directories |
| -s | lists file size in KB (kilobytes) |

- Here's how each command looks:

```

unix@hmfmac32:~ [2:48pm - 1] ls
dead.letter      mail                public_html        unixfile

```

```

unix@hmfmac32:~ [2:57pm - 2] ls -a
.                .login             .plan              mail
..               .pine-debug1      .project           public_html
.cshrc           .pinerc            dead.letter        unixfile

```

```

unix@hmfmac32:~ [2:57pm - 3] ls -F
dead.letter      mail/               public_html/       unixfile

```

```

unix@hmfmac32:~ [2:57pm - 4] ls -l
total 3
-rw-r--r--  1 unix          0 Feb  5 11:47 dead.letter
drwx-----  2 unix        512 Feb  5 11:44 mail
drwxr-sr-x  2 unix        512 Feb  5 11:46 public_html
-rw-r--r--  1 unix        277 Feb  5 14:53 unixfile

```

```

unix@hmfmac32:~ [2:57pm - 5] ls -R
dead.letter      mail                public_html        unixfile

mail:
saved-messages  sent-mail

public_html:
index.html

```

```

unix@hmfmac32:~ [2:57pm - 6] ls -s
total 3
  0 dead.letter      1 public_html
  1 mail              1 unixfile

```

2. **cp** Copy file

```

unix@hmfmac32:~ [2:58pm - 7] cp unixfile copy

```

3. **mv** Move file

```

unix@hmfmac32:~ [3:22pm 9] mv copy public_html/.

```

- moved the file “copy” to the directory called “public_html”
- the dot (.) at the end means the name of the file will be the same

```

unix@hmfmac32:~ [3:32pm - 10] ls
dead.letter      mail                public_html        unixfile
unix@hmfmac32:~ [3:32pm - 11] ls public_html
copy              index.html

```

- now “copy” is in “public_html” instead of in the root directory

4. **rm** Remove (delete) file

```

unix@hmfmac32:~ [3:32pm - 12] rm public_html/copy

unix@hmfmac32:~ [3:33pm - 13] ls public_html
index.html

unix@hmfmac32:~ [3:33pm - 14] ls
dead.letter      mail                public_html        unixfile

```

- after removing “copy,” you can see it’s not in the “public_html” directory nor the root directory when you type “ls”

II. VIEWING FILES:

1. **cat** Concatenate - displays a file on your screen
2. **more** Displays a file with page breaks

- try the above commands with “unixfile” and you’ll see the difference!

```

unix@hmfmac32:~ [3:35pm 15] cat unixfile
unix@hmfmac32:~ [3:35pm 16] more unixfile

```

3. **head -number** Displays the first (number) of lines in a file
4. **tail -number** Displays the last (number) of a file

```
unix@hmfmac32:~ [3:35pm 17] head unixfile
unix@hmfmac32:~ [3:35pm 18] tail unixfile
```

- you can also “head” or “tail” the file with the number of lines you want to see, for example, [19] gives you the first 3 lines of “unixfile,” and [20] gives you the last 12 lines of “unixfile.”

```
unix@hmfmac32:~ [3:35pm - 19] head -3 unixfile
unix@hmfmac32:~ [3:35pm - 20] tail -12 unixfile
```

III. DIRECTORIES:

1. **pwd** Tells what your current working directory is

```
unix@hmfmac32:~ [3:54pm - 21] pwd
/home/cafejr/unix
```

- this means you are in your root directory

2. **cd** Change directory

```
unix@hmfmac32:~ [3:55pm - 22] cd public_html
unix@hmfmac32:~/public_html [3:55pm - 23] pwd
/home/cafejr/unix/public_html
```

- after you change directories (by doing “cd”) to public_html, it shows up when you enter “pwd”!

```
unix@hmfmac32:~/public_html [3:55pm - 24] cd
unix@hmfmac32:~ [3:55pm - 25] pwd
/home/cafejr/unix
```

- if you just type “cd” without any directory name, it brings you back to your root directory. (If you were already in the root directory, then it will do nothing!)

3. **mkdir** Make directory

```
unix@hmfmac32:~ [3:56pm - 26] mkdir temp
unix@hmfmac32:~ [4:09pm - 27] ls -F
dead.letter  mail/      public_html/  temp/        unixfile
```

- after you make the directory “temp,” do “ls -F” shows the new directory

4. **rmdir** Remove directory

```
unix@hmfmac32:~ [4:09pm - 28] rmdir temp
unix@hmfmac32:~ [4:09pm - 29] ls
dead.letter  mail      public_html  unixfile
```

- rmdir temp will remove the directory named temp.

IV. FINDING INFORMATION:

1. **finger** Get account information on another user

```

unix@hmfmac32:~ [4:10pm - 30] finger unix@hmfmac32
[hmfmac32.Berkeley.EDU]
Login name: unix                In real life: unix
guess
Directory: /home/cafejr/unix    Shell: /bin/tcsh
On since Feb  5 14:36:49 on tty0 from pmf-049.Berkeley
19 minutes Idle Time
No unread mail
Project: Learn UNIX
Plan:
will love using UNIX after I finish this class!
Yeah! =)

Login name: unix                In real life: unix
guess
Directory: /home/cafejr/unix    Shell: /bin/tcsh
On since Feb  5 14:48:38 on tty1 from pmf-049.Berkeley

```

2. **ping** Sends a message to a remote machine to determine if it is alive (up)

```

unix@hmfmac32:~ [4:14pm - 31] ping uclink4
uclink4.Berkeley.EDU is alive

```

3. **which** Shows you which program in your path will be called with a certain command

```

unix@hmfmac32:~ [4:14pm - 32] which ping
/usr/etc/ping

```

4. **whereis** Searches the machine and displays any files that begin with ping

```

unix@hmfmac32:~ [4:16pm - 33] whereis ping
ping: /etc/ping /usr/etc/ping /usr/man/man8/ping.8c

```

5. **who** "Who" are the users currently logged in on the local machine

```

unix@hmfmac32:~ [4:16pm - 34] who
unix      pts/39      Feb  6 12:47      (wmf43.Berkeley.EDU)
oski     pts/21      Feb  6 12:07      (dgaf24.berkeley.edu)
dabear   pts/33      Feb  6 12:38      (wonko:S.0)

```

6. **man** Displays the manual page for a command, (man man is a good place to start)

7. **whoami** For those with quick bouts of amnesia

```

unix@hmfmac32:~ [4:18pm - 35] whoami
unix

```

V. DOT (.) FILES:

- 1) **.plan** If created, a .plan adds its contents to the bottom of your finger
- 2) **.project** If created, a .project adds its contents before .plan.

- if you remember the command finger earlier, you'll notice that the output contains a project and a plan line.

- 3) **.signature** If created, a signature file adds its contents to the bottom of any email you send.

VI: PROGRAMS:

- 1) **pico** A simple, nice, clean, basic editor
- 2) **pine** A user friendly email program for unix
- 3) **mail, elm** Not-so-user friendly email programs for unix
- 4) **vi, emacs, jove** Not-so-user friendly editors but MUCH more powerful than pico

VII: OTHER USEFUL COMMANDS:

- 1) **passwd** Changes your password, should be done at least every six months
- 2) **logout, quit, exit** Any three of these commands will end your UNIX session
- 3) **cal** Shows the current month's calendar
(For a specific month, type in **cal (month) (year)** like the following example: **cal 05 1998**)
- 4) **date** Shows today's date

CONCLUSION

By this time, we hope that you have a fairly good idea of some of the commonly used features within the UNIX operating system. Even though there were plenty of features that were not covered, we hope that you will find all of the information presented useful. If you have any questions, please ask the Instructor or Roamer. Also, try to experiment with the topics covered, and see what you can create as well.

Remember to fill out an evaluation before you leave, and thank you for attending Introduction to Unix.

OTHER RESOURCES

You can also learn more about the UNIX operating system with the following references:

- **online resources:**
http://www.yahoo.com/Computers_and_Internet/Software/Operating_Systems/Unix/
<http://unix.oreilly.com>
- **Books: (O'Reilly & Associates, books famous for the unique animals on their covers)**
Learning the UNIX Operating System, 4th Edition
UNIX in a Nutshell: System V Edition
UNIX Power Tools, 2nd Edition