Introduction to UNIX

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Logging In

- New account creation form
  - https://apps.cs.utexas.edu/udb/newaccount

- Public Labs:
  - open 24/7/365
  - **ENS basement (1&2 [Microlab], 31NR)** – Linux workstations and Windows machines, email udb@cs for access the ENS parking lot card reader
  - **Painter 5.38 – Microlab** – Linux workstations and Windows machines.
    - Use a SSH client to connect from a Windows machine to a public UNIX machine.

- Linux machines now run a Lucid LTS build, so you will be greeted with a graphical login screen (ctrl+alt+F1 for a virtual console, ctrl+alt+F7/8 to return)

- As long as you're connected to the Internet you can connect remotely to public CS machines (discussed further on the next slide).

Connecting Remotely

- You must connect to a public CS machine.

- Public Machines:

  - Linux Machines (all of them are now running a Lucid build):
    juiblex, mig, totoro

- In order to find available **cshosts**
  - Type **cshosts pub** on the command line for public machines or use the online list:
  - http://apps.cs.utexas.edu/unixlabstatus/

- To log in, use a SSH program such as SSH Secure Shell or PuTTY (both available from Bevoware).
  - https://www.utexas.edu/its/bevoware/download/
  - When connecting, enter a machine name as follows: *name*.cs.utexas.edu

- **NOTE:** The machine **cs.utexas.edu** is a server and cannot be logged into!

File System

- The UNIX file system consists of directories and files. Directories contain files or other directories. Files can be programs, text documents, etc.
  - You can think of a directory as a folder in Windows or Macs.
  - Directories contain files or other folders, just like typical operating systems

- The file system is organized as an inverted tree.
  - the directories are branches, and the files are leaves.
  - The topmost directory is **/**, and is called **root**
    - all other directories and files are underneath root.

- All of a user's files are in a home directory, **/u/user**
  - **user** is the login name for that account.
  - It is abbreviated **~user,** mine is ~rivin

- Use the command **pwd** if you can't remember which directory you are in.

Flags and Arguments

- **command [flags] [arguments]**

- **command:** The name of the command.
  - **ls** lists the contents of a directory.

- **flags:** switches that modify the function of the base command. Flags usually begin with a "-".
  - **ls –a** shows all the files (including hidden files) in the current directory.
  - **ls –l** shows files, in long-listing format, in the current directory.

  - Flags can be combined.
    - **ls –al** shows all the files (including configuration files) in long-listing format, in the current directory.
    - Flags are swappable, so **ls –la** will do the same.

- **arguments:** usually the name of a file or directory to perform operations on.
  - **ls dirname** shows all the files (in normal-listing format) in the directory **dirname**.

- Flags and Arguments can be combined.
  - **ls –al dirname** shows all the files (including hidden files) in long-listing format, in the directory **dirname**.

Text Editors

- *pico*:

  - A very easy to use text editor (the one that is used inside of alpine by default).

- *vi:*

  - A small, fast, consistent text editor that does not have a windows interface.
  - Type **man vi** for various commands to manipulate files.
  - Type **:help** inside of vi to bring up the help file.

- *emacs:*

  - Feature-rich
  - Can run with a text interface from within a terminal shell, or in its own window with menus, etc. Type **emacs** to start the program and then **Ctrl-h t** to run a tutorial.
  - Emacs will run in its own window when running Xwindows. Just type **emacs** and the window will come up.

Basic UNIX Commands

- **ls directory**: Lists the contents of the **directory**. If no directory name is given, it will list the files in the directory you are in.

- **cd directory**: Change from current directory to **directory**. If no name is given, it will go to your home directory.

- **mkdir dir1**: Create a directory named **dir1**. Multiple directory names can be given.

- **cp file1 file2**: Make a copy of **file1** and name it **file2**. If **file2** already exists, it will be overwritten.

- **rm file1**: Remove the file named **file1**. Multiple filenames can be given.

- **mv file1 file2**: Rename **file1** as **file2**
- **mv file1 directory2**: Move **file1** into **directory2**.
  - For example, **mv project1 CS310** would move the file **project1** into the directory **CS310**
    - The directory **CS310** must be created first.

- **.snapshot**: Grab the most recent version of a file if you accidentally deleted it.

| The Pipe

|
(shift-\)
takes the output of one command and feeds it to another command.

less is a pager (shows you a text file one page at a time).
cshosts shows you all the hosts in CS (many pages).

cshosts | less
takes the output of cshosts (many pages) and runs less on it.

grep string filename looks for instances of **string** inside of **filename**.

cshosts | grep mo
tells you the machine names returned by **cshosts** that contain instances of "**mo**".

More UNIX Commands

X   **acroread filename.pdf**: Read a .pdf file. If no filename is given, it will open the program with no initial file.

- **xpdf** can also be used.

X   **gv filename.ps**: If you ever get a .ps (postscript) file, use this to view it. If no name is given, it will open the program with no initial file.

X   **gimp filename**: View a graphics file (.jpg or .gif).

- **chkquota**: Check your disk-space usage in megabytes.

- **gzip filename**: Zip a file to conserve space.
- **gunzip filename**: Unzip a file that is zipped.
- **zip/unzip filename**: Winzip compatible

- **ps uxw (ps –u *user*)**: Check the processes you have running.
- **kill 14083**: Kill the process with PID# 14083.

Electronic Mail

- Your email address is **your_login@cs.utexas.edu**.

- Mail Programs:
  There are literally hundreds of mail readers freely available for UNIX.
  - Staff supports **alpine**, **mutt**, and **thunderbird**.

- Reading mail:
  Typing **alpine** with no username puts you into the Alpine mail program.
  - Selecting *Message Index* will show you the contents of your mailbox.

- Sending mail:
  alpine username sends mail to the person with the login **username**. If it's a CS login, you can leave off the domain name. Otherwise, use the entire email address: (**name@domain.com**).

- Finding addresses:
  phone name will try to find someone with that name in CS.

Printing

- All printers are numbered in the CS department as **lw#** (for example, lw4).
- A banner page is printed with your file to keep users' work separated.

- **lpr**
  lpr –Plw4 file1 will send file1 to printer number 4, in the Taylor basement lab.

- **lpq**
  lpq –Plw4 will list job numbers of all the files currently in lw4's print queue (those waiting to be printed).

- **lprm**
  lprm –Plw4 900 will remove job number 900 from lw4's print queue (the job number can be found with lpq).

- **less /lusr/share/etc/printcap** gives a list of printers and their locations

- Printing FAQ:
  http://www.cs.utexas.edu/facilities/faq
  http://www.cs.utexas.edu/facilities/documentation/printing-options

Getting Help

- In the Department:

  - **man pages**: Use the **man** command to get help on a command.
    - For example: type **man ls** to see the many different ways in which you can use the **ls** command to list your files.
  - **CS website**: The department FAQ page is located at http://www.cs.utexas.edu/facilities/faq/
  - **Clue Sheets**: In ENS 31NR lab
  - **Forgot your password**: https://apps.cs.utexas.edu/udb/passwd
  - **Change your mail forward, shell, grant MSDN access**: https:/apps.cs.utexas.edu/udb/update
  - **Tech staff blog**: https://www.cs.utexas.edu/apps/blog/updates/index.scgi

- Outside the Department:

  - There are many useful references available on the web.
    - Google is your friend.
  - There are also many good UNIX books available.
  - This PowerPoint: http://www.cs.utexas.edu/~rivin/UNIXclass.pptx (or .ppt)

Useful Addresses

Here are some addresses to write for information about the CS system:

- **help**@cs.utexas.edu:
  General questions can be sent here when you aren't sure who to contact.

- **udb**@cs.utexas.edu:
  You can write udb@cs (short for User Database) for questions pertaining to individual accounts. This includes questions about alumni mail forwarding, finger information (name, phone number, etc), account renewal, machine access, etc.

- **gripe**@cs.utexas.edu:
  More complex questions about UNIX, any bugs you see or complaints you have, and questions about using CS resources or equipment can be sent to gripe@cs.

Open a **shopreq** for hardware problems, such as printer malfunction, printer out of paper, mouse problems, monitor problems, etc. Type **shopreq** at a command prompt and fill in the blanks, or fill out the form online: http://apps.cs.utexas.edu/shopreq/

If you do not send mail, we cannot fix the problem.

Logging Out

- **Always return to the login prompt before leaving a lab**
  - **NOTE**: If we find machines that are logged in while doing rounds in the labs, we will likely log you out.

- Exit a shell by typing **ctrl-d** or **exit**. Exiting a shell will close a window in X.

- When logged in via ssh, one **exit** or **logout** will get you all the way out.