

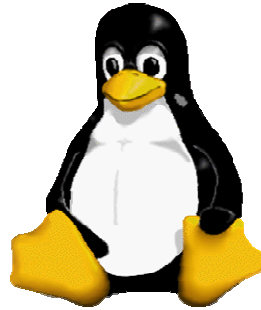
Operating Systems and Using Linux

Topics

- What is an Operating System?
- Linux Overview
- Frequently Used Linux Commands

Reading

None.



What is an Operating System

- A computer program
- Performs many operations, such as:
 - Allows you to communicate with the computer (tell it what to do)
 - Controls access (login) to the computer
 - Keeps track of all **processes** currently running
- At this point, your main concern is how to communicate with the computer using the OS

How Do I Communicate With the Computer Using the OS?

- You communicate using the particular OS's **user interface**.
 - **Graphical User Interface (GUI)** - Windows
 - **Command-driven interface** –
 - DOS,
 - UNIX,
 - Linux
- We will be using the **Linux** operating system, which is very similar to UNIX.

How Do I Communicate With the Computer Using the OS? (con't)

- When you **log in** to the Linux system here, a **user prompt** will be displayed:

linux#[1]% _

- where **#** is the number of the Linux server that you have connected to. You may use any of the Linux servers.
- The number in the brackets will change as you work. It is the “number” of the command that you are about to type.
- If this prompt is not on the screen at any time, you are not communicating with the OS.

Linux Overview

- Files and Filenames
- Directories and Subdirectories
- Frequently Used Commands



Files

- A **file** is a sequence of bytes.
- It can be created by
 - a text editor (**emacs**, **xemacs** or pico)
 - a computer program (such as a C program)
- It may contain a program, data, a document, or other information .
- Files that contain other files are called **directories** (sometimes called **folders**).



Linux Filenames



- Restrictions
 - **May NOT contain blanks or other reserved characters**
 - **Have a maximum length**
 - **Are case sensitive**
- By convention, Linux filenames often contain a period followed by one or more characters.
- This is called an **extension**, and is often used to convey information about the contents of the file.
- It is best to stick with filenames that contain letters (uppercase or lowercase), numbers, and the underscore (`_`) for now.

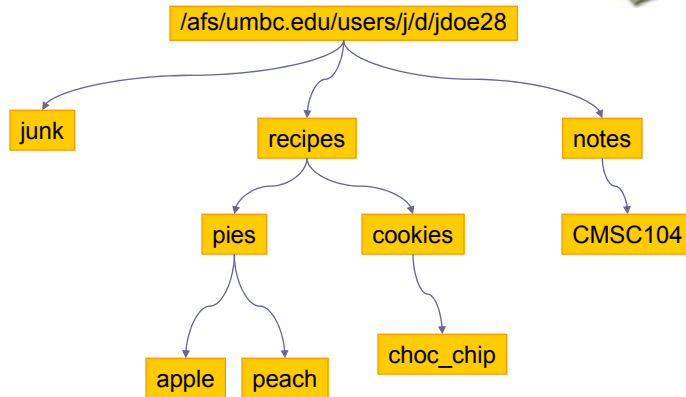
Projec_1.c

Directories

- Directories contain files or other directories called **subdirectories**. They may also be empty.
- Directories are organized in a **hierarchical** fashion.
- They help us to keep our files organized.



Directories (con't)



```
linux2[2]> pwd
/afs/umbc.edu/users/j/d/jdoe28
linux2[3]>
```

Directories (con't)

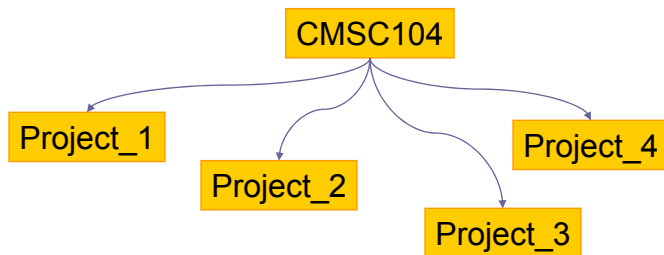


- Your **home directory** is where you are located when you log in
 - `/afs/umbc.edu/users/j/d/jdoe28`
- The **current directory** is where you are located at any time while you are using the system.
 - To print current path use `pwd` command
- Files within the same directory must be given unique names.
- **Paths** allow us to give the same name to different files located in different directories.
- Each running program has a current directory and all filenames are implicitly assumed to start with the name of that directory unless they begin with a slash.

Subdirectories

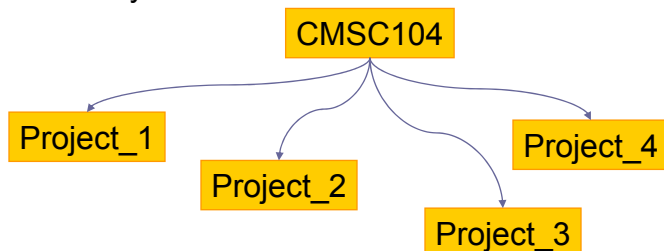


- **Subdirectories** are used for organizing your files
- For example,
 - make a subdirectory for CMSC104
 - make subdirectories for each project



Moving in the Directory Tree

- **.** (dot) is the current directory.
- **..** (dot-dot) is the **parent directory**.
- Use the Linux command **cd** to change directories.
- Use dot-dot to move up the tree.
- Use the directory name to move down.
- Use the complete directory name (path name) to move anywhere.



Working with Directories

- To create a directory use **mkdir** command
 - **mkdir** *directoryname*

```
linux2[4]> mkdir cmsc104  
linux2[5]> mkdir recipes
```



Working with Directories

- To delete an empty directory use **rmdir** command
 - **rmdir** *directoryname*
linux2[5]> **rmdir** recipes
- To delete **Non-empty** directory use **rmdir -r** command
 - Non-empty directory- directory that contains files or other directories
 - **rmdir -r** *directoryname*
linux2[5]> **rmdir -r** recipes

ls, mv commands

- **ls** - List information about the files in current directory
 - **-a, --all** do not hide entries starting with **.**

- **mv** Renames a file or moves it from one directory to another directory.
 - **mv myfile.txt newdirectory/**
 - moves the file **myfile.txt** to the directory **newdirectory**.
 - **End result is just one file**
 - **mv fileA.txt fileB.txt**
 - **fileA.txt** and renames it **fileB.txt**

more, cp commands

- **more** - Displays text one screen at a time.
 - **more +3 myfile.txt**
 - would begin displaying the file **myfile.txt** at line three.

- **cp** - copies files.
 - **cp file1.txt newdir/**
 - Copies the **file1.txt** to the **newdir** directory. Creates a second file and does not remove the original.
 - End result is two files (**mv** command removes the original file)

rm command

□ **rm** - Deletes a file without confirmation (by default).

■ **rm myfile.txt**

□ would remove the file `myfile.txt` without prompting the user.

■ **rm -i myfile.txt**

□ `-i` Interactive option prompts for confirmation before removing any files.

■ **rm -r mydirectory/**

□ would remove a directory, even if files existed in that directory.



Cat

□ **cat** command is used to join multiple files together and print the result on screen.

```
cat f01.txt  
this is the text in file 01
```

```
cat f01.txt f02.txt  
this is the text in file 01  
this is the test in file 02
```



Wildcard Characters

- You will find **wildcard characters** useful when manipulating files (e.g., listing or moving them).
- The wildcard characters are ***** and **?**
 - **?** is used to represent any single character.
 - ***** is used to represent 0 or more characters.



xemacs

A screenshot of the XEmacs editor window. The window title is 'XEmacs: moo-trash.tmp'. The menu bar includes File, Edit, View, Cmds, Tools, Options, Buffers, and Lisp. The toolbar contains icons for Open, Dired, Save, Print, Cut, Copy, Paste, Undo, Spell, A-B-C, Replace, Mail, Info, Compile, Debug, and News. The main text area contains the following text:

```
moo-trash.tmp
;; This buffer is for notes you don't want to save, and for Lisp evaluation.
;; If you want to create a file, first visit that file with C-x C-f,
;; then enter the text in that file's own buffer.

hi CMSC104

xemacs Rocks!
```

A cartoon penguin mascot is visible in the background of the text area. The status bar at the bottom shows 'ISO8-----XEmacs: moo-trash.tmp (Lisp Interaction)-----All-----' and 'Wrote /home/Olga/moo-trash.tmp'.

emacs

```
File Edit Options Buffers Tools Help
;; This buffer is for notes you don't want to save, and for Lisp evaluation.
;; If you want to create a file, visit that file with C-x C-f,
;; then enter the text in that file's own buffer.

hi CMSC104
emacs rocks!

--**F1 *scratch* <Lisp Interaction>--L7--All--
```



Frequently Used Linux Commands

- `passwd`, `man`, `lpr`, `ctl-c`

References:

- Linux man page
- Links from the 104 homepage
- Books and the Internet

