



Lesson Module Checklist

- Slides
- Converted WB

- Flash cards
- Page numbers
- 1st minute quiz
- Web Calendar summary
- Web book pages
- Commands

- Lab tested
- Put sonnet6 & bigfile in depot

- Real test 1 staged on blackboard
- Test 1 system configured, tested and ready

- 9V backup battery for microphone
- Backup slides, CCC info, handouts on flash drive



Student checklist

- 1) Browse to the CIS 90 website Calendar page
 - <http://simms-teach.com>
 - Click CIS 90 link on left panel
 - Click Calendar link near top of content area
 - Locate today's lesson on the Calendar

- 2) Download the presentation slides for today's lesson for easier viewing

- 3) Click Enter virtual classroom to join CCC Confer session

- 4) Connect to Opus using Putty or ssh command

Introductions and Credits



Jim Griffin

- Created this Linux course
- Created Opus and the CIS VLab
- Jim's site: <http://cabrillo.edu/~jgriffin/>



Rich Simms

- HP Alumnus
- Started teaching this course in 2008 when Jim went on sabbatical
- Rich's site: <http://simms-teach.com>

And thanks to:

- John Govsky for many teaching best practices: e.g. the First Minute quizzes, the online forum, and the point grading system (<http://teacherjohn.com/>)

First Minute Quiz

Please answer these questions **in the order** shown:

No Quiz today ... test instead

For credit email answers to:

risimms@cabrillo.edu

within the **first few minutes of class**



Instructor: **Rich Simms**

Dial-in: **888-886-3951**

Passcode: **136690**



Francisco



Leila



Justin



Jesus



Shenghong



Paul



Roberto



Sam



Navin



Jimmy



Luis



Tommy



Adrian



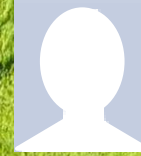
Ann



Cameron



Cody



Alejandrino



Deane



Nadia



Richard Z.



Gabriel



Ryan



Takashi



Jeff



Nick



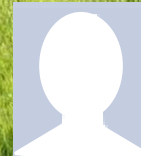
Jonathan



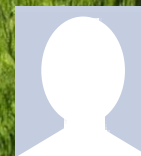
Shea



Dylan



Joshua



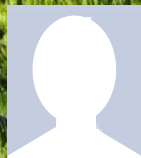
Richard I.



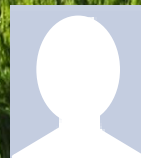
Aaron



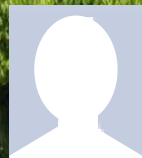
Nicole



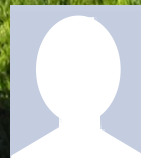
James



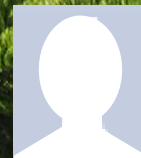
Matthew



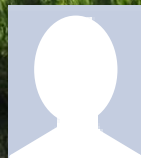
Abraham



Chris



Ronald

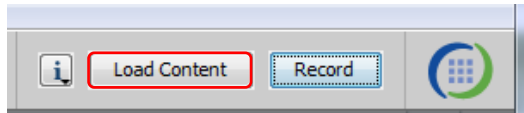


Scott



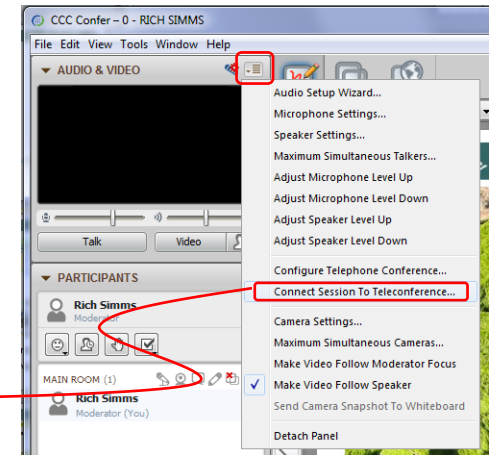
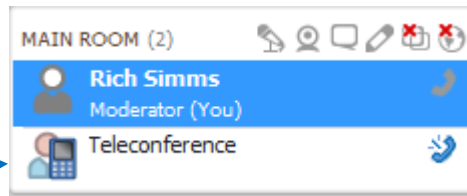
Instructor CCC Confer checklist

[] Preload White Board



[] Connect session to Teleconference

Session now connected to teleconference



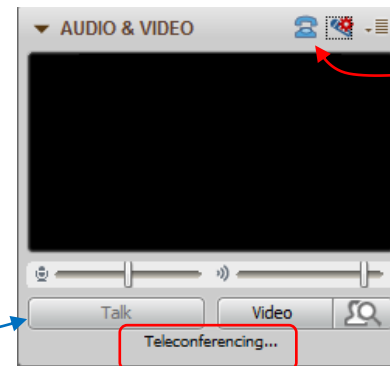
[] Is recording on?



Red dot means recording

[] Use teleconferencing, not mic

Should be greyed out



Should show as this live "off hook" telephone handset icon and the Teleconferencing ... message displayed



Instructor CCC Confer checklist

The screenshot displays a Windows desktop with several applications open:

- CCC Confer**: A video conference window on the left showing a participant named Rich Simms. It includes controls for audio and video, a list of participants, and a chat window.
- foxit for slides**: A Foxit Reader window in the center-left displaying a PDF document titled 'cis90lesson07.pdf'. A red callout box labeled 'foxit for slides' points to the document.
- chrome**: A Google Chrome browser window in the top-right displaying a webpage from 'simms-teach.com/docs/cis90/cis-90-TEST-1-Fall-12.pdf'. A red callout box labeled 'chrome' points to the browser.
- putty**: A terminal window in the center-right showing a login session for 'simben90@oslab:~'. The prompt is '/home/cis90/simben \$'. A red callout box labeled 'putty' points to the terminal.
- vSphere Client**: A vCenter - vSphere Client window in the bottom-right showing a virtual machine inventory for 'CIS 192'. A red callout box labeled 'vSphere Client' points to the window.

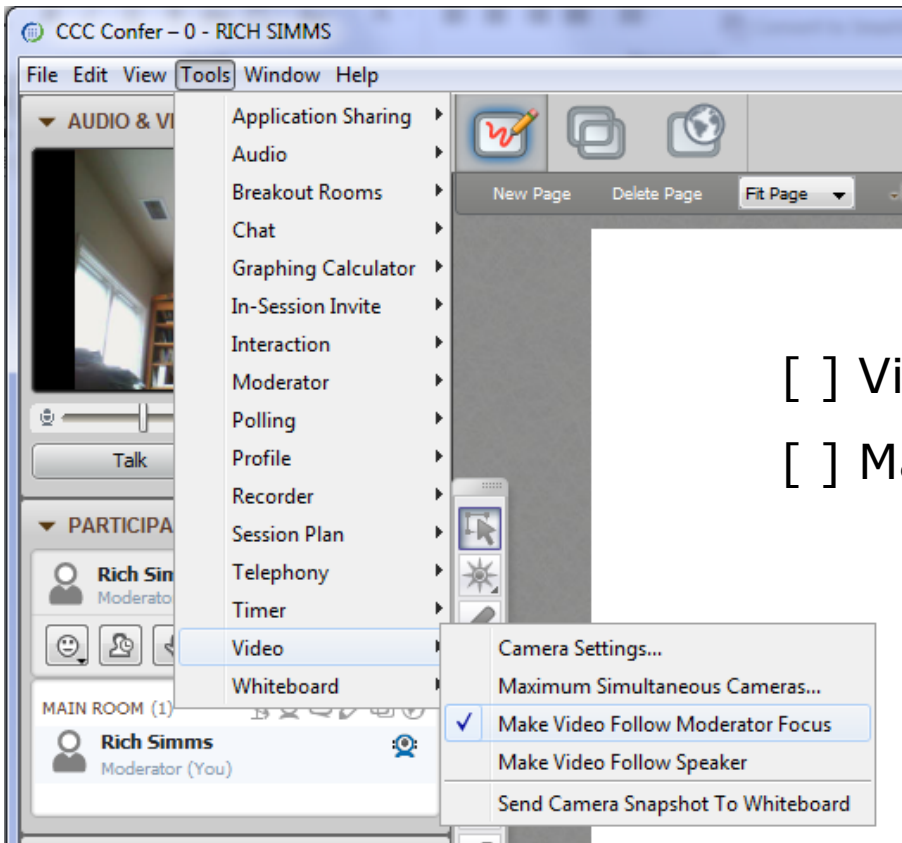
At the bottom of the desktop, the taskbar shows various application icons, and the system tray displays the time as 6:52 AM on 10/10/2012.

[] layout and share apps





Instructor CCC Confer checklist

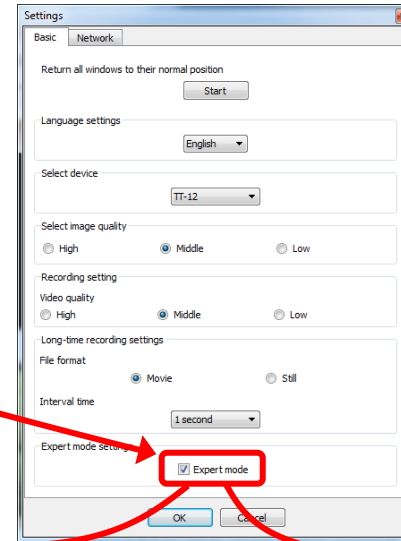
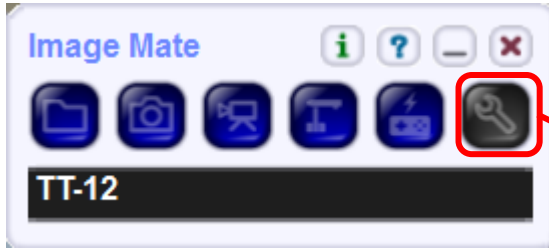


[] Video (webcam)

[] Make Video Follow Moderator Focus



Using Elmo with CCC Confer

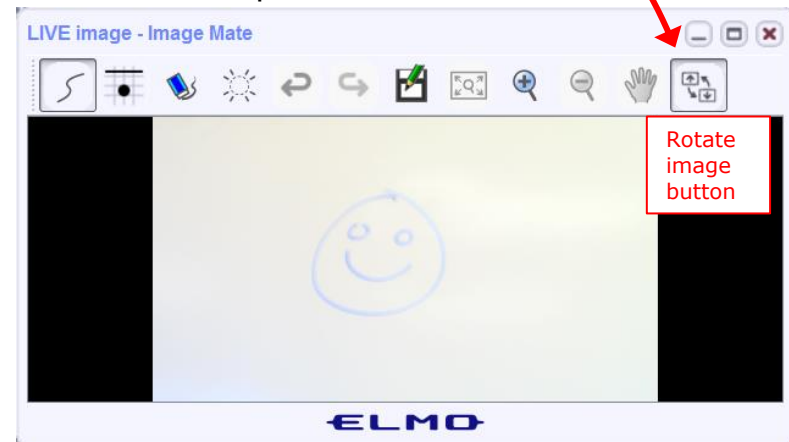


The "rotate image" button is necessary if you use both the side table and the white board.

Elmo rotated down to view side table



Elmo rotated up to view white board



Run and share the Image Mate program just as you would any other app with CCC Confer

Instructor CCC Confer checklist

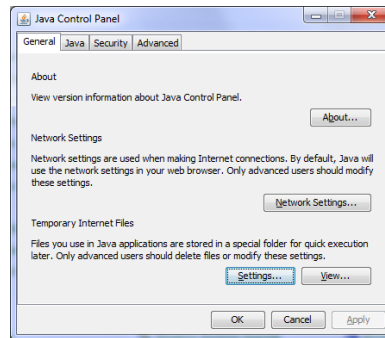
Universal Fix for CCC Confer:

- 1) Shrink (500 MB) and delete Java cache
- 2) Uninstall and reinstall latest Java runtime

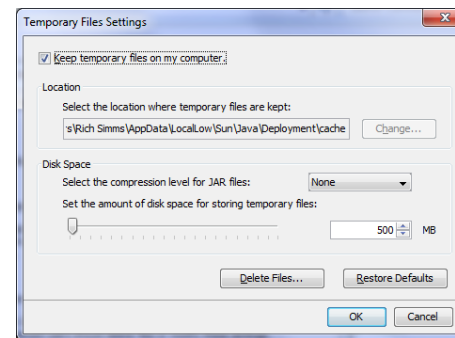
Control Panel (small icons)



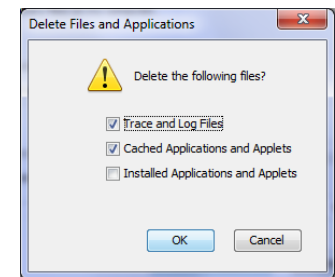
General Tab > Settings...



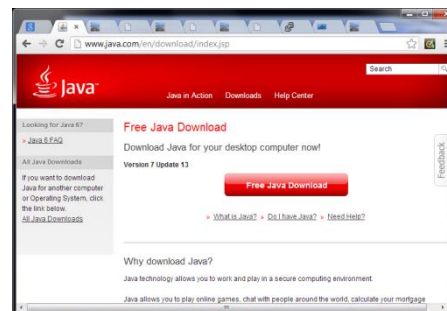
500MB cache size



Delete these



Google Java download



Managing Files

Objectives

- Be able to create, copy, move, remove and link files

Agenda

- Questions
- Housekeeping
- Managing files
- Wrap up
- Test



Questions

Questions?

Lesson material?

Labs? Tests?

How this course works?

- Graded work in home directories
- Answers in /home/cis90/answers

Who questions much, shall learn much, and retain much.

- Francis Bacon

If you don't ask, you don't get.

- Mahatma Gandhi

Chinese
Proverb

他問一個問題，五分鐘是個傻子，他不問一個問題仍然是一個傻瓜永遠。

He who asks a question is a fool for five minutes; he who does not ask a question remains a fool forever.

Lab 4

Post

Mortem

Lab 4 results

Answers in /home/cis90/answers

01	16 XXXXXXXX	31 XXXXXXXXXXXXXXXX
02	17 XXXX	32 XXXXXXXXXXXXXXXX
03 XXXX	18 XXX	33 XXXXXXXXXXXXXXXXXXXX
04 X	19 XXX	
05 XX	20 XXXXXXXXXXXXXXXX	
06 XX	21 X	
07 XXXX	22 XXXXXXXXXXXXXXXX	
08 XX	23 XXXXX	
09 XXX	24 XXXXXXXXXXXXXXXX	
10 XXXXXXXXXXXXXXXX	25 XXXX	
11 XX	26 XXXX	
12 XXXXXXXXX	27 XXXXX	
13 X	28 XXXX	
14 XXXX	29 XXXXXXXXXXXXXXXX	
15 XXXXXXXX	30 XXXXXXXXXXXXXXXXXXXX	

33 labs
submitted



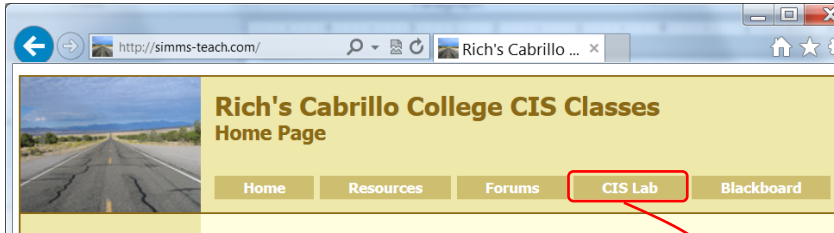
3 labs not
submitted



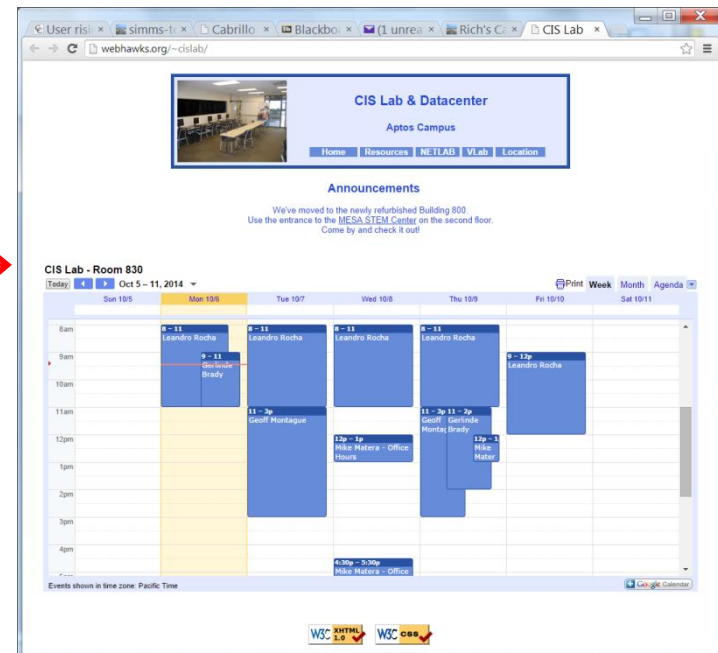
Each X = one incorrect or missing answer

CIS Lab Schedule

<http://webhawks.org/~cislab/>



If you would like some additional help come over to the CIS Lab.



Leandro and Geoff are both CIS 90 Alumni.

Michael is the other Linux instructor.

Or hang around after class. Rich has his office hours right after each class in Room 828.

CIS 90 Tutoring Available

<http://www.cabrillo.edu/services/tutorials/>

The screenshot shows the Cabrillo College website's Tutorials Center page. The page is titled "TUTORIALS" and includes a navigation menu with options like "ABOUT", "ACADEMICS/CAREERS", "ADMISSIONS", "CLASS SCHEDULES", "REGISTRATION", and "WEBADVISOR". The main content area is divided into several sections:

- TUTORIALS:** A section with an image of students working together.
- ANNOUNCEMENTS & DEADLINES:** A teal box listing new subjects for Spring 2014: American Sign Language, Computer Applications/Business Technology (CABT), Computer and Information Systems (CIS), and History 17A.
- Welcome to the Tutorials Center!:** A section with a photo of two women and a list of services:
 - Tutoring is by appointment. The days and times of tutoring sessions are established by the office.
 - Sessions are weekly and for the duration of the semester.
 - Tutoring sessions are scheduled in small groups. Sessions last 1-2 hours depending on the class. Occasionally, sessions may be one to one but that is not guaranteed.
 - Come directly to the TC office to schedule (second floor of library).
- The following classes are being tutored for Spring 2014:**
 - Accounting 1A, 1B, 6, 54A, 151A, 159, 163
 - American Sign Language (ASL) 1, 2
 - Biology 4, 5, 6
 - Computer Applications/Business Technology (CABT) 31, 38, 41, 101, 157, 160
 - Computer and Information Systems (CIS) 81, 90, 172** (highlighted with a red box)
 - Chemistry 1A, 1B, 2, 30A, 30B, 32
- CONTACT INFORMATION:** A section for the Tutorials Center with contact details:
 - Location:** Room 1080A - Learning Resource Center
 - Phone:** 831.479.6470
 - Email:** tutorialscenter@cabrillo.edu
 - Coordinator:** Lori Chavez
 - Phone:** 831.479.6126
 - Email:** lchavez@cabrillo.edu
 - Hours:** Monday - Thursday: 9am - 5pm; Friday: 9am - 1pm



Matt Smithey

All students interested in tutoring in CIS 90, 172, and 81 classes need to come directly to the Tutorials Center to schedule, register and fill out some paperwork. This is just a one-time visit.

The tutoring will take place at the STEM center.



Housekeeping

No Labs due today

Test 1 will become available at 3:00 PM

- Using Blackboard
- Online timed test - 60 minutes long
- Working students may take test this evening but it must be started before 11:00 PM

Perkins/VTEA Survey

Carl D. Perkins Vocational and Technical Education Act

POSTREPLY Search this topic... Search 2 posts • Page 1 of 1

Carl D. Perkins Vocational and Technical Education Act
by Rich Simms » Wed Sep 24, 2014 7:24 am



Rich Simms
Posts: 1401
Joined: Sat Jan 16, 2010 6:47 pm

The Carl D. Perkins Vocational and Technical Education Act was originally authorized by Congress in 1984. It was reauthorized in 1998 and again in 2006. This act provides federal funding for improving career technical education (CTE) within the United States in order to help the economy.

For Cabrillo College to receive a portion of this funding students in technical classes must fill out a survey. The more surveys completed the more funds the college will receive. The survey only needs to be completed once per term by each student.

This survey can be completed online using web advisor:

Log on to WEBADVISOR at <https://wave.cabrillo.edu>

Select "STUDENTS: Click Here" (navy blue bar)

- Under "Academic Profile" Click on "Student Update Form"
- Use drop down list under "Select the earliest term for which you are registered" and click on the current term.
- Select "SUBMIT"

Scroll down to the "Career Technical Information"

- Answer questions by clicking on the circle to the left of your "Yes" or "No" answers
- You can get details about a question by clicking on blue underlined phrase
- After answering all questions Select "SUBMIT"

Then "LOG OUT"

Thank you for taking a few minutes to help Cabrillo College CS/CIS programs!

- Rich

This is an important source of funding for Cabrillo College.

*Send me an email stating you completed this survey for **three points extra credit!***

THIS MAY BE THE LAST CHANCE!

Career Technical Information
Your answers to these questions will help qualify Cabrillo College for Perkins/VTEA grant funds.

Are you currently receiving benefits from:

Yes No TANF/CALWORKS

Yes No SSI (Supplemental Security Income)

Yes No GA (General Assistance)

Yes No Does your [income](#) qualify you for a fee waiver?

Yes No Are you a single parent with custody of one or more minor children?

Yes No Are you a [displaced homemaker](#) attending Cabrillo to develop job skills?

Yes No Have you moved in the preceding 36 months to obtain, or to accompany parents or spouses to obtain, temporary or seasonal employment in agriculture, dairy, or fishing?

<http://simms-teach.com/cis90grades.php>

The screenshot shows a web page with a table of student grades. The table has several columns, including student names and grades. The bottom portion of the table is highlighted in green. The page also contains various text elements and navigation links.

GRADES

Be sure and check your progress on the Grades page as the course continues on.

Send me a student survey if you haven't already to get your LOR secret code name.

Current Point Tally

As of 10/06/2014

Points that could have been earned:

4 quizzes: 12 points
 4 labs: 120 points
 1 forum quarter: 20 points
Total: 152 points

Percentage	Total Points	Letter Grade	Pass/No Pass
90% or higher	504 or higher	A	Pass
80% to 89.9%	448 to 503	B	Pass
70% to 79.9%	392 to 447	C	Pass
60% to 69.9%	336 to 391	D	No pass
0% to 59.9%	0 to 335	F	No pass

If you are not happy with your current standing contact the instructor ASAP

Jesse's checkgrades python script

<http://oslab.cabrillo.edu/forum/viewtopic.php?f=31&t=773&p=2966>

```
/home/cis90/simben $ checkgrades smeagol
```

Remember, your points may be zero simply because the assignment has not been graded yet.

Quiz 1: You earned 3 points out of a possible 3.
Quiz 2: You earned 3 points out of a possible 3.
Quiz 3: You earned 3 points out of a possible 3.

Forum Post 1: You earned 20 points out of a possible 20.

Lab 1: You earned 28 points out of a possible 30.
Lab 2: You earned 30 points out of a possible 30.
Lab 3: You earned 30 points out of a possible 30.

You've earned 6 points of extra credit.

You currently have a 103% grade in this class. (123 out of 119 possible points.)

*Use your LOR
code name as
an argument on
the checkgrades
command*

Jesse is a CIS 90 Alumnus. He wrote this python script when taking the course. It mines data from the website to check how many of the available points have been earned so far.

Managing Files



New commands for your toolbox:

touch	<i>to make a file (or update the timestamp)</i>
mkdir	<i>to make a directory</i>
cp	<i>to copy a file</i>
mv	<i>to mv or rename a file</i>
rmdir	<i>to remove a directory</i>
rm	<i>to remove a file</i>
ln	<i>to create a link</i>
tree	<i>to visual list a directory</i>

Redirecting stdout:

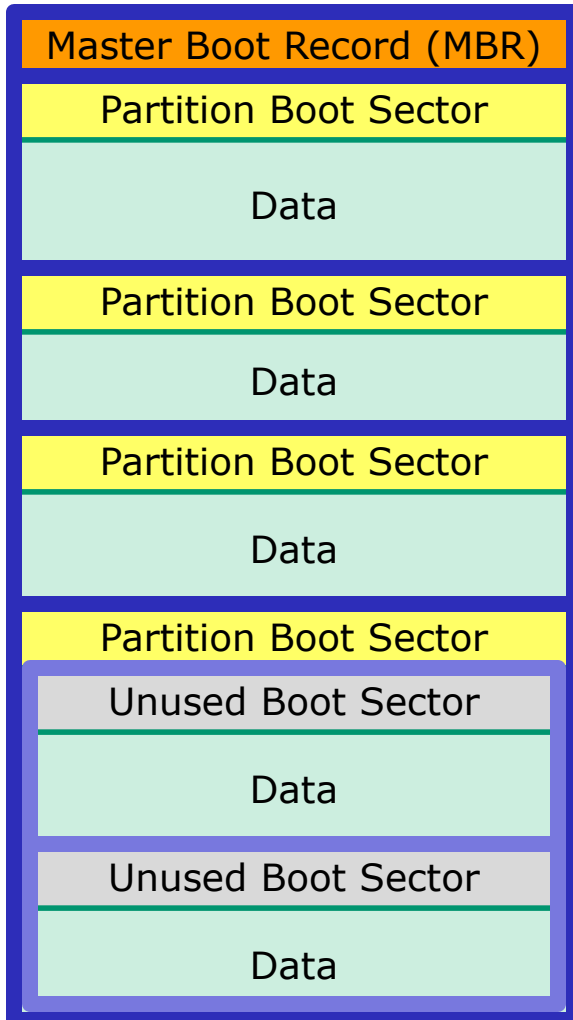
> *filename* *redirecting stdout to create/empty a file*



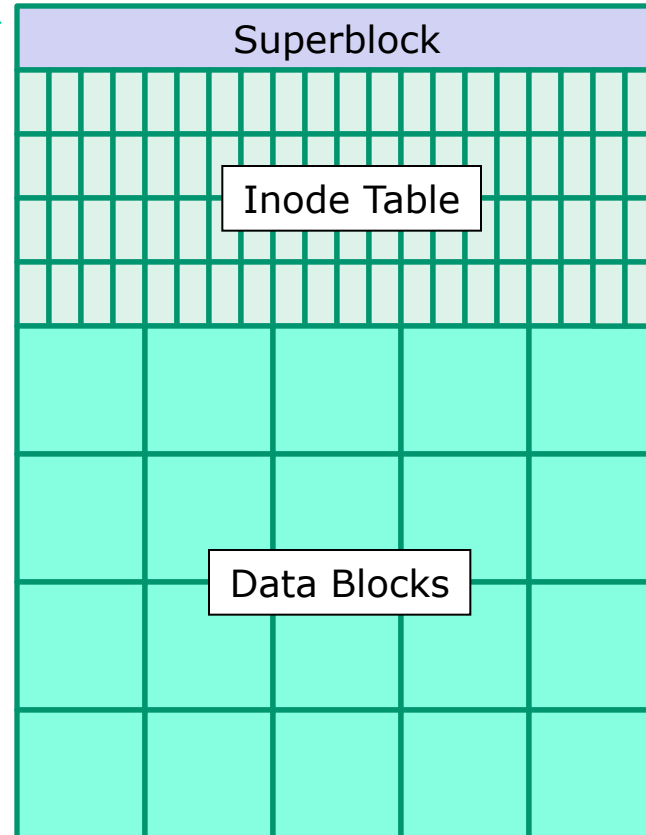
File Systems

Linux

The hard drive is partitioned and the data areas can be formatted as a file system. Linux typically uses ext2, ext3 and ext4 file systems. Windows uses FAT32 and NTFS file systems.



ext3 file system



UNIX Files

The three elements of a file

```
/home/cis90/simben/Poems $ ls  
ant Blake nursery Shakespeare twister Yeats
```

filename

+

```
/home/cis90/simben/Poems $ ls -li twister  
102625 -rw-r--r-- 1 simben90 cis90 151 Jul 20 2001 twister
```

inode number

inode information

inode

+

```
/home/cis90/simben/Poems $ cat twister  
A tutor who tooted the flute,  
tried to tutor two tooters to toot.  
Said the two to the tutor,  
"is it harder to toot? Or to  
tutor two tooters to toot?"
```

data

filenames are stored in directories, **not** in inodes

bigfile 19470
bin 9628
letter 9662

Hello Mother! Hello Father!

Here I am at Camp Granada. Things are very entertaining, and they say we'll have some fun when it stops raining.

All the counselors hate the waiters, and the lake has alligators. You remember Leonard Skinner? He got ptomaine poisoning last night after dinner.

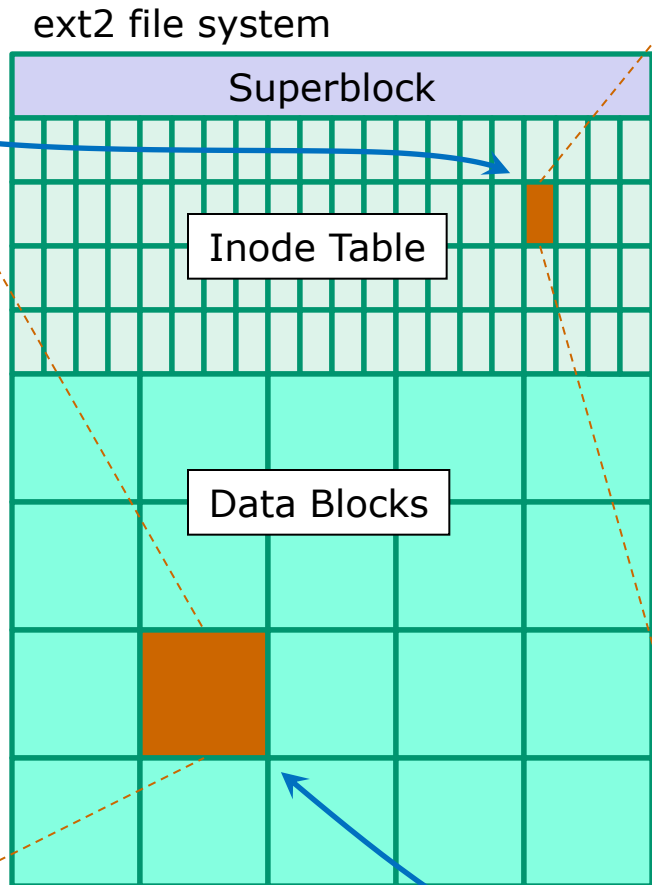
Now I don't want this to scare you, but my bunk mate has malaria. You remember Jeffrey Hardy? Their about to organize a searching party.

Take me home, oh Mother, Father, take me home! I hate Granada. Don't leave me out in the forest where I might get eaten by a bear! Take me home, I promise that I won't make noise, or mess the house with other boys, oh please don't make me stay -- I've been here one whole day.

Dearest Father, darling Mother, how's my precious little brother? I will come home if you miss me. I will even let Aunt Bertha hug and kiss me!

Wait a minute! It's stopped hailing! Guys are swimming!
Guys are sailing! Playing baseball, gee that's better!
Mother, Father, kindly disregard this letter.

Alan Sherman



9662	inode number
-	Type
rw-r--r--	Permissions
1	Number of links
simben90	User
cis90	Group
1044	Size
2001-07-20	Modification time
2012-09-17	Access Time
2012-08-01	Change time
Pointer(s) to data blocks	Pointer(s) to data blocks

```
/home/cis90/simben $ ls -il letter
9662 -rw-r--r--. 1 simben90 cis90 1044 Jul 20 2001 letter
```

Creating Files

Creating Files

Command syntax:

touch *<new-filename>*

- creates an empty ordinary file(s), or if the file already exists, it updates the time stamp.

mkdir *<new-directory-name>*

- creates an empty directory(s)
- options: -p (to create nested directories)

echo *"string"* **>** *<new-filename>*

- Creates or overwrites a text file

Creating Files

The touch command

touch <*new-name*>

creates one or more empty regular files, or if the file already exists, it updates the time stamp.

A new file, named sawyer is created in the current working directory

```
/home/cis90/simben $ ls -l sawyer
```

```
ls: sawyer: No such file or directory
```

```
/home/cis90/simben $ touch sawyer
```

```
/home/cis90/simben $ ls -l sawyer
```

```
-rw-rw-r-- 1 simben90 cis90 0 Mar 18 06:34 sawyer
```

*The file type
is a regular
file*

*The file owner
is simben90
(Benji)*

*The file size is 0
bytes (an empty file)*

Creating Files

The touch command

Multiple files can be created with one command

```
/home/cis90/simben $ ls -l a b c  
ls: a: No such file or directory  
ls: b: No such file or directory  
ls: c: No such file or directory
```

```
/home/cis90/simben $ touch a b c multiple arguments allowed  
/home/cis90/simben $ ls -l a b c  
-rw-rw-r-- 1 simben90 cis90 0 Mar 17 09:27 a  
-rw-rw-r-- 1 simben90 cis90 0 Mar 17 09:27 b  
-rw-rw-r-- 1 simben90 cis90 0 Mar 17 09:27 c
```


Creating Files

The touch command

The last modified timestamp for sawyer is updated if the file already exists

```
/home/cis90/simben $ ls -l sawyer
```

```
-rw-rw-r-- 1 simben90 cis90 0 Mar 18 06:34 sawyer
```

```
/home/cis90/simben $ touch sawyer
```

```
/home/cis90/simben $ ls -l sawyer
```

```
-rw-rw-r-- 1 simben90 cis90 0 Mar 18 06:40 sawyer
```

Last modified

*Last modified
timestamp
updated*

Creating Files

The mkdir command

mkdir <*new-name*>

creates one or more new directories

Create a new directory named island

```
/home/cis90/simben $ ls -l island
ls: island: No such file or directory
```

```
/home/cis90/simben $ mkdir island
/home/cis90/simben $ ls -ld island
drwxrwxr-x 2 simben90 cis90 4096 Mar 18 06:43 island
```

*Note: Use the **d** option on the **ls** command to list information about the directory itself rather than directory contents*

The basic file type is a directory

The file owner is a simben90 (Benji)

The file size is 4096 bytes

Creating Files

The mkdir command

Create multiple directories at once

```
/home/cis90/simben $ mkdir redhat debian slackware
/home/cis90/simben $ ls -ld redhat/ debian/ slackware/
drwxrwxr-x 2 simben90 cis90 4096 Mar 17 09:36 debian/
drwxrwxr-x 2 simben90 cis90 4096 Mar 17 09:36 redhat/
drwxrwxr-x 2 simben90 cis90 4096 Mar 17 09:36 slackware/
```

*Note: Use the **d** option on the **ls** command to list information about the directory itself rather than directory contents*

Creating Files

The mkdir command

Create nested directories (one directory inside another)

```
/home/cis90/simben $ mkdir africa/ghana
```

```
mkdir: cannot create directory `africa/ghana': No  
such file or directory
```

```
/home/cis90/simben $ mkdir -p africa/ghana
```

```
/home/cis90/simben $ ls africa
```

```
ghana
```

*Need to use the **p** option to create new parent directories as needed*



Creating Files

Redirection to stdout

echo "string" > newfile Creates or overwrites a text file

Creating a file named accra and adding some text to it

```
/home/cis90/simben $ cd africa  
/home/cis90/simben/africa $ ls  
ghana  
/home/cis90/simben/africa $ cd ghana  
/home/cis90/simben/africa/ghana $ echo Population 1,658,937 > accra  
/home/cis90/simben/africa/ghana $ cat accra  
Population 1,658,937
```

Output of the echo command is redirected from the screen to a file named accra



Creating Files

Redirection to stdout

Be careful!



```
/home/cis90/simben/africa/ghana $ cat accra
Population 1,658,937
/home/cis90/simben/africa/ghana $ > accra
/home/cis90/simben/africa/ghana $ cat accra
/home/cis90/simben/africa/ghana $
```

The redirection character > will create the file named if that file does not exist.

If the file does exist it will be emptied without warning!

Class Exercise

- In your home directory create a directory named *characters* inside a directory name *island*.

```
mkdir -p island/characters
```

- In the directory named *characters* create three files:

```
cd island/characters  
echo "Katherine Anne Austin" > kate  
echo "James Ford" > sawyer  
echo "Hugo Reyes" > hurley
```

- Print all files with **cat ***
- Empty the file *hurley*

```
> hurley
```



Listing Files

Listing Files

Short listing

```
/home/cis90/simben $ ls island  
characters
```

Short recursive listing

```
/home/cis90/simben $ ls -R island  
island:           Directory name  
characters       Contents of directory  
  
island/characters: Sub-directory pathname  
hurley kate sawyer Contents of sub-directory
```

Managing the UNIX/Linux File System

Long listing

```
/home/cis90/simben $ ls -l island
total 8
drwxrwxr-x 2 simben90 cis90 4096 Mar 18 07:25 characters
```

Long recursive listing

```
/home/cis90/simben $ ls -lR island
island:      Directory name
total 8
                                Contents of directory
drwxrwxr-x 2 simben90 cis90 4096 Mar 18 07:25 characters
```

```
island/characters:  Sub-directory pathname
total 24
                                Contents of sub-directory
-rw-rw-r-- 1 simben90 cis90 11 Mar 18 07:25 hurley
-rw-rw-r-- 1 simben90 cis90 22 Mar 18 07:25 kate
-rw-rw-r-- 1 simben90 cis90 11 Mar 18 07:25 sawyer
```

Managing the UNIX/Linux File System

Making a directory tree diagram

```
/home/cis90/simben $ tree island
```

```
island
```

```
`-- characters  
    |-- hurley  
    |-- kate  
    `-- sawyer
```

```
1 directory, 3 files
```

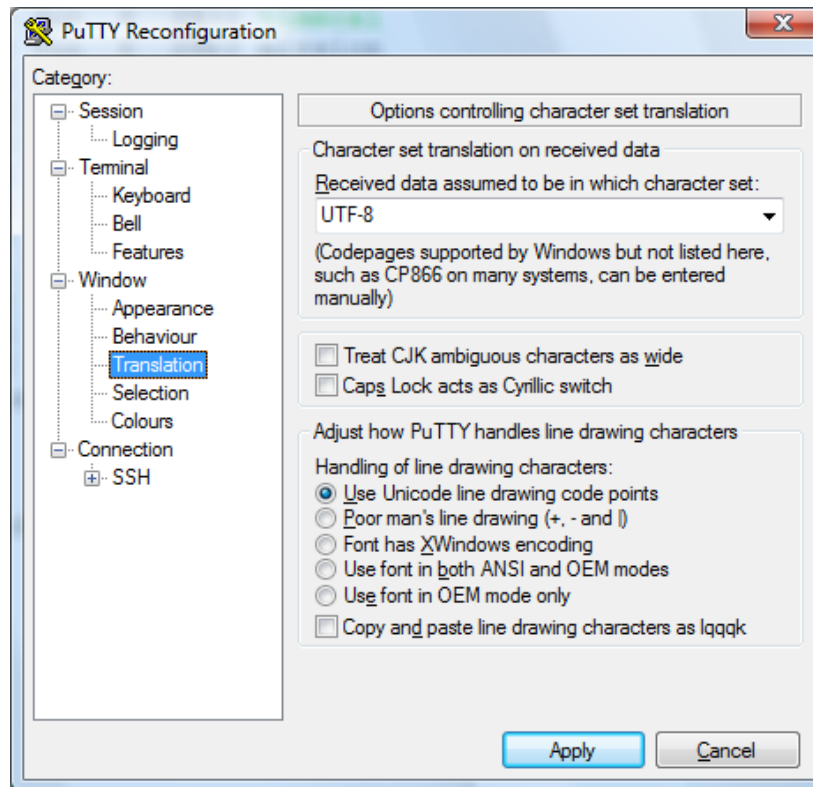
```
/home/cis90/simben $
```



Putty must be configured to use the UTF-8 translation to show line drawing characters

Managing the UNIX/Linux File System

Putty may need to be configured UTF-8 for tree command



Class Exercise

- Return to your home directory with:

```
cd
```

- Do a long listing of the *island* directory with:

```
ls island
```

- Do a long recursive listing of the *island* directory with:

```
ls -lR island
```

- Make tree diagram of the *island* directory with:

```
tree island
```

Copying Files

Copying files

The **cp** command

Command syntax:

cp *<source file>* *<target file>*

cp *<source file>* *<target directory>*

cp *<source file>* *<target directory>/<target file>*

cp *<source file>* *<source file>* *<target directory>*

options: **-i -r**

i = warn before overwriting target files

r = recursive (copies all source sub-directories)

Where: <source file> <target file> <target directory>
are **absolute** or **relative** pathnames

Copying files

Copy one file to another

cp *<source file>* *<target file>*

```
/home/cis90/simben $ cd
/home/cis90/simben $ cd island/characters/
/home/cis90/simben/island/characters $ ls
hurley kate sawyer
/home/cis90/simben/island/characters $ echo "Hugo Reyes" > hurley
```

Make a copy of the hurley file

```
/home/cis90/simben/island/characters $ cp hurley hurley.bak
/home/cis90/simben/island/characters $ ls
hurley hurley.bak kate sawyer
```


Copying files

Copy multiple files to a directory

cp *<source file>* *<source file>* *<target directory>*

```
/home/cis90/simben/island/characters $ ls  
hurley hurley.bak kate sawyer
```

Make a new directory called backup

```
/home/cis90/simben/island/characters $ mkdir backup
```

Copy three files of the four files to the new directory

```
/home/cis90/simben/island/characters $ cp hurley kate sawyer backup/  
/home/cis90/simben/island/characters $ ls backup  
hurley kate sawyer
```

Copying files

Copy multiple files to a directory

cp <source file> <source file> <target directory>

Copy all files to the new directory

```
/home/cis90/simben/island/characters $ cp * backup/
```

```
cp: omitting directory `backup'
```

*While parsing the shell expands *
to hurley hurley.bak kate sawyer*

*Although * matches backup,
it is not included in the copy*

List the four files in the new directory

```
/home/cis90/simben/island/characters $ ls backup/
```

```
hurley hurley.bak kate sawyer
```

Note: copying a file to an existing file will overwrite that file without warning!

Copy files

The **i** (interactive) option to warn about overwrites

```
/home/cis90/simben/island/characters $ ls h*  
hurley  hurley.bak  
/home/cis90/simben/island/characters $ cp -i hurley hurley.bak  
cp: overwrite `hurley.bak'? yes  
/home/cis90/simben/island/characters $
```

*The **i** option provides some interaction with the user before overwriting a file*

Copying files

The **r** (recursive) option to copy an entire tree branch

```
/home/cis90/simben/island/characters $ cd ..  
/home/cis90/simben/island $ ls  
characters
```

This directory does not exist yet



```
/home/cis90/simben/island $ cp -r characters players  
/home/cis90/simben/island $ ls -R players  
players:  
backup hurley hurley.bak kate sawyer  
  
players/backup:  
hurley hurley.bak kate sawyer  
/home/cis90/simben/island $
```

A recursive copy will copy everything in a directory (including all files and nested subdirectories) to another directory

Class Exercise

- Change to your *island* directory using an absolute path

```
cd /home/cis90/simben/island/characters/
```

Use your own username



- Make a backup copy of *kate*

```
cp kate kate2
```

- Copy *hurley* and overwrite *kate* using interactive mode

```
cp -i hurley kate      (Respond with yes to overwrite)  
cat kate
```

- Restore *kate* from the backup copy

```
cp kate2 kate  
cat kate
```

Moving Files

Moving Files

The **mv** command

Command syntax:

mv *<source file>* *<target file>*

mv *<source file>* *<target directory>*

mv *<source file>* *<target directory>/<target file>*

mv *<source file>* *<source file>* *<target directory>*

options: **-i**

i = warn before overwriting

Where: <source file> <target file> <target directory>
are **absolute** or **relative** pathnames

Moving Files

Renaming a file with the **mv** command

mv <original name> <new name>

This is how you rename files in UNIX/Linux!

```

/home/cis90/simben $ touch iPhone iPad ProLiant Pavilion Powerege
/home/cis90/simben $ mv Powerege PowerEdge      typo fixed by
                                                    renaming file
/home/cis90/simben $ ls iP* P[ra]* Pow*
iPad  iPhone  Pavilion  PowerEdge  ProLiant

```

oops ... typo! →

← *successfully renamed*

Moving Files

Moving a file into a directory

mv <source file> <target directory>

```
/home/cis90/simben $ mkdir Apple HP Dell Make some new directories
```

```
/home/cis90/simben $ mv iPhone Apple/ Move one file at a time into one of  
/home/cis90/simben $ mv iPad Apple/ the new directories
```

```
/home/cis90/simben $ ls Apple List the new directory the files were moved into  
iPad iPhone
```

Moving Files

Moving multiple files into a directory

mv *<source file>* *<source file>* *<target directory>*

```
/home/cis90/simben $ mv ProLiant Pavilion PowerEdge HP/
```

Moving multiple files at once into a directory

Moving Files

The **mv** command

Listing the contents of multiple directories to verify file moves

```
/home/cis90/simben $ ls Apple HP Dell
```

```
Apple:
```

```
iPad iPhone
```

```
Dell:
```

```
PowerEdge
```

```
HP:
```

```
Pavilion ProLiant
```

```
/home/cis90/simben $ tree Apple HP Dell
```

```
Apple
```

```
|-- iPad
```

```
`-- iPhone
```

```
HP
```

```
|-- Pavilion
```

```
`-- ProLiant
```

```
Dell
```

```
`-- PowerEdge
```

```
0 directories, 5 files
```

Class Exercise

- Change to your *island* directory using an relative path

```
cd  
cd island/characters/
```

- Rename *kate* to *katherine*

```
mv kate katherine  
cat katherine
```

- Create a new file named *jin* and rename it to be hidden

```
touch jin  
mv jin .jin
```

(verify with `ls` and `ls -a`)

Removing Files

Removing Files

The **rm** and **rmdir** commands

Removing files:

rm <file-pathname> ...

The ... (ellipses) mean you can specify more than one filename per command

options: **-i -r -f**

i = prompt before remove

r = recursive (delete subdirectories)

f = force (never prompt)

rmdir <directory-pathname> ...

Directories must be empty for this to work

Removing Files

The **rm** and **rmdir** commands

Remove a file:

```
/home/cis90/simben $ touch junk1 junk2 junk3 junk4  
/home/cis90/simben $ ls junk*  
junk1 junk2 junk3 junk4
```

*Create four
test files*

```
/home/cis90/simben $ rm junk1  
/home/cis90/simben $ ls junk*  
junk2 junk3 junk4
```

Remove one of them

Note: the file is removed without warning!

Removing Files

Using the `i` option to interactively remove multiple files

Remove one or more files interactively:

```

/home/cis90/simben $ rm -i junk*
rm: remove regular empty file `junk2'? y Remove just the junk2 file
rm: remove regular empty file `junk3'? n
rm: remove regular empty file `junk4'? n

/home/cis90/simben $ ls junk* Verify it was removed
junk3  junk4

```


Removing Files

The **rmdir** command

Use **rmdir** to remove a directory

```
/home/cis90/simben $ mkdir junkdir1 Make a test directory
/home/cis90/simben $ touch junkdir1/junk6 Put a test file in new directory

/home/cis90/simben $ rmdir junkdir1 Try to remove non-empty directory
rmdir: junkdir1: Directory not empty

/home/cis90/simben $ rm junkdir1/junk6 Remove file in directory
/home/cis90/simben $ rmdir junkdir1 Remove empty directory
/home/cis90/simben $
```

Directories must be empty to be removed by rmdir

Class Exercise

- Change to your home directory

```
cd
```

- Create some test files

```
touch junk1 junk2 junk3 junk4  
ls junk*
```

- Remove one

```
rm junk1  
ls junk*
```

- Remove the others

```
rm junk[234]  
ls junk*
```

linking files

Linking files

The **ln** command

Command syntax:

ln *<existing-name>* *<new-name>*

options: -s

s = symbolic link (like Windows shortcut)

With UNIX there are hard and soft (symbolic) links

Linking files

Hard links

Creating a "hard" link

In *<existing-name>* *<new-name>*

```
/home/cis90/simben $ echo "Chocolate Licorice Taffy Jelly Beans" > sweets
/home/cis90/simben $ cat sweets
Chocolate Licorice Taffy Jelly Beans
```

```
/home/cis90/simben $ ln sweets dulces Hard link dulces to sweets
/home/cis90/simben $ ls -il sweets dulces
100176 -rw-rw-r-- 2 simben90 cis90 37 Mar 14 09:29 dulces
100176 -rw-rw-r-- 2 simben90 cis90 37 Mar 14 09:29 sweets
```



*Hard links allows **multiple** filenames for the **same** file. The link count on a long listing tells you how many names the file has.*

Linking files

Hard links

Creating a "hard" link

ln <existing-name> <new-name>

```
/home/cis90/simben $ ln sweets candy Hard link candy to dulces
/home/cis90/simben $ ls -il sweets dulces candy
100176 -rw-rw-r-- 3 simben90 cis90 37 Mar 14 09:29 candy
100176 -rw-rw-r-- 3 simben90 cis90 37 Mar 14 09:29 dulces
100176 -rw-rw-r-- 3 simben90 cis90 37 Mar 14 09:29 sweets
```

same inode *number of hard linked files*

```
/home/cis90/simben $ ln sweets bonbons Hard link bonbons to sweets
/home/cis90/simben $ ls -il sweets dulces candy bonbons
100176 -rw-rw-r-- 4 simben90 cis90 37 Mar 14 09:29 bonbons
100176 -rw-rw-r-- 4 simben90 cis90 37 Mar 14 09:29 candy
100176 -rw-rw-r-- 4 simben90 cis90 37 Mar 14 09:29 dulces
100176 -rw-rw-r-- 4 simben90 cis90 37 Mar 14 09:29 sweets
```

same inode *number of hard linked files*

Linking files

Hard links

The . and .. directories are hard links!

```
/home/cis90/simben $ ls -ldi . /home/cis90/simben
```

```
98306 drwxr-xr-x 10 simben90 cis90 4096 Mar 14 09:41 .
98306 drwxr-xr-x 10 simben90 cis90 4096 Mar 14 09:41 /home/cis90/simben
```

← same inode

← number of hard linked files
(includes the . file and .. files in sub-directories)

```
/home/cis90/simben $ ls -ldi .. /home/cis90/
```

```
2395394 drwxr-x--- 42 rsimms cis90 4096 Mar 6 08:17 ..
2395394 drwxr-x--- 42 rsimms cis90 4096 Mar 6 08:17 /home/cis90/
```

← same inode

← number of hard linked files
(includes the . file and .. files in sub-directories)

Hard links allows **multiple** filenames for the **same** file.

Note the hidden . and .. files different filenames for the same directories

Linking files

Hard links

Creating a "hard" link

In *<existing-name>* *<new-name>*

```
/home/cis90/simben $ rm sweets
/home/cis90/simben $ ls -il sweets dulces candy bonbons
ls: sweets: No such file or directory
100176 -rw-rw-r-- 3 simben90 cis90 37 Mar 14 09:29 bonbons
100176 -rw-rw-r-- 3 simben90 cis90 37 Mar 14 09:29 candy
100176 -rw-rw-r-- 3 simben90 cis90 37 Mar 14 09:29 dulces
```

↑ *same inode*

↑ *number of hard linked files*

Removing one of the hard linked files will not delete any of the other hard links, it will just decrement the number of hard links shown in a long listing

Linking Files

Symbolic "Soft" Links

Creating a "soft" (symbolic) link

ln -s <existing-name> <new-name>

The s option for a symbolic link

```
/home/cis90/simben $ ln -s /etc/httpd/conf/httpd.conf apache
```

Creating a symbolic link to the Apache configuration file

```
/home/cis90/simben $ ls -li apache /etc/httpd/conf/httpd.conf
```

```
100172 lrwxrwxrwx 1 simben90 cis90 26 Mar 14 09:13 apache -> /etc/httpd/conf/httpd.conf
1280166 -rw-r--r-- 1 root root 33776 Feb 29 18:45 /etc/httpd/conf/httpd.conf
```

l for symbolic link, - for regular file

Different inodes

Symbolic links are like Windows shortcuts. They are two separate files and it is possible to break the links when the target files get renamed.

Linking Files

Symbolic "Soft" Links

```
/home/cis90/simben $ ls -li apache /etc/httpd/conf/httpd.conf
100172 lrwxrwxrwx 1 simben90 cis90    26 Mar 14 09:13 apache -> /etc/httpd/conf/httpd.conf
1280166 -rw-r--r-- 1 root      root   33776 Feb 29 18:45 /etc/httpd/conf/httpd.conf
```

```
/home/cis90/simben $ head -n 5 apache
```

```
#
# This is the main Apache server configuration file.  It contains the
# configuration directives that give the server its instructions.
# See <URL:http://httpd.apache.org/docs/2.2/> for detailed information.
# In particular, see
```

```
/home/cis90/simben $ head -n 5 /etc/httpd/conf/httpd.conf
```

```
#
# This is the main Apache server configuration file.  It contains the
# configuration directives that give the server its instructions.
# See <URL:http://httpd.apache.org/docs/2.2/> for detailed information.
# In particular, see
```

From Benji's home directory, he can now refer to the Apache configuration file using either `apache` or `/etc/httpd/conf/httpd.conf`

Class Exercise

- Create a file named candy using:
`> candy`
- Create a hard link to candy named sweets using:
`ln candy sweets`
- Create a soft link to candy named dulces using:
`ln -s candy dulces`
- List them using:
`ls -li candy sweets dulces`

Wrap up (lesson)

New commands:

cp

copy files

ln

link files

mkdir

make directory

mv

move or rename files

rm

remove files

rmdir

remove directory

touch

make/modify a file

tree

draw file tree branch

Redirection:

>

redirects stdout



Lab 6: Organizing Files

The goal of this lab is to become proficient with system commands for copying, moving, renaming, creating and removing files within your home directory.

Forum

Forum link: <http://opus.cabrillo.edu/forum/viewforum.php?f=46>

Check out forum for any lab-breaking news about this lab. The forum is also the place to go if you get stuck, have a question or want to discuss something you have learned about this lab.

Procedure

Log on to the OpenLab server as that you have a command link shell at your disposal. Be sure you are in your home directory to start this lab. We are going to reorganize the files in our home directory. This will involve making new subdirectories and moving files around. The questions asked during this procedure are for your challenge only. You will be graded on correctly performing this procedure. At the end of this lab you will submit your own layout by entering the command:

submit

Part 1 - Making Directories

1. Display a listing of the files in your home directory using the `ls -l` command.
2. Now we're going to make some new directories using the `mkdir` command:
 - a. Make a new directory named `code` for keeping our lab code using the following command:
`mkdir code`
 - b. Make the new directory's contents using the `cp` option of the `ls` command. Do you see the two hidden files that were created with this directory?
 - c. You can make more than one new directory at a time by supplying the arguments to the `mkdir` command. Make two new directories, one called `dir1` and one called `dir2`.
 - d. Verify that they were made in your home directory.

In this lab you will reorganize your home directory

Be careful. For this lab, the slower you go the sooner you will be done!

Next Class

Assignment: Check Calendar Page on web site to see what is due next week:

<http://simms-teach.com/cis90calendar.php>

Lab 5 due

Quiz questions for next class:

- What command is used to rename a file?
- If two files are hard linked do they have the same or different inode numbers?
- What option for the rm command provides confirmation when deleting files?



Test 1

Test 1 will become available at 3:00 PM on Blackboard

- Online timed test 60 minutes long
- Working students may take test this evening but it must be started before 11:00 PM

Test 1 HONOR CODE:

- **This test is open book, open notes, and open computer. HOWEVER, you must work alone.**
- **You may not discuss the test questions or answers with others during the test.**
- **You may not ask or receive assistance from anyone other than the instructor when doing this test.**
- **Likewise you may not give any assistance to anyone taking the test.**



Notes to instructor

[] Send email on Opus to students

```
~/cis90/test01/q29/mail-q29-T1 [at job]
```

[] Logoff users and lock door on practice test system

```
skill -KILL -v pts/xx
```

```
cp /etc/nologin.bak /etc/nologin [at job]
```

[] Allow logins on real test system

```
rm /etc/nologin [at job]
```



Test 1

Backup