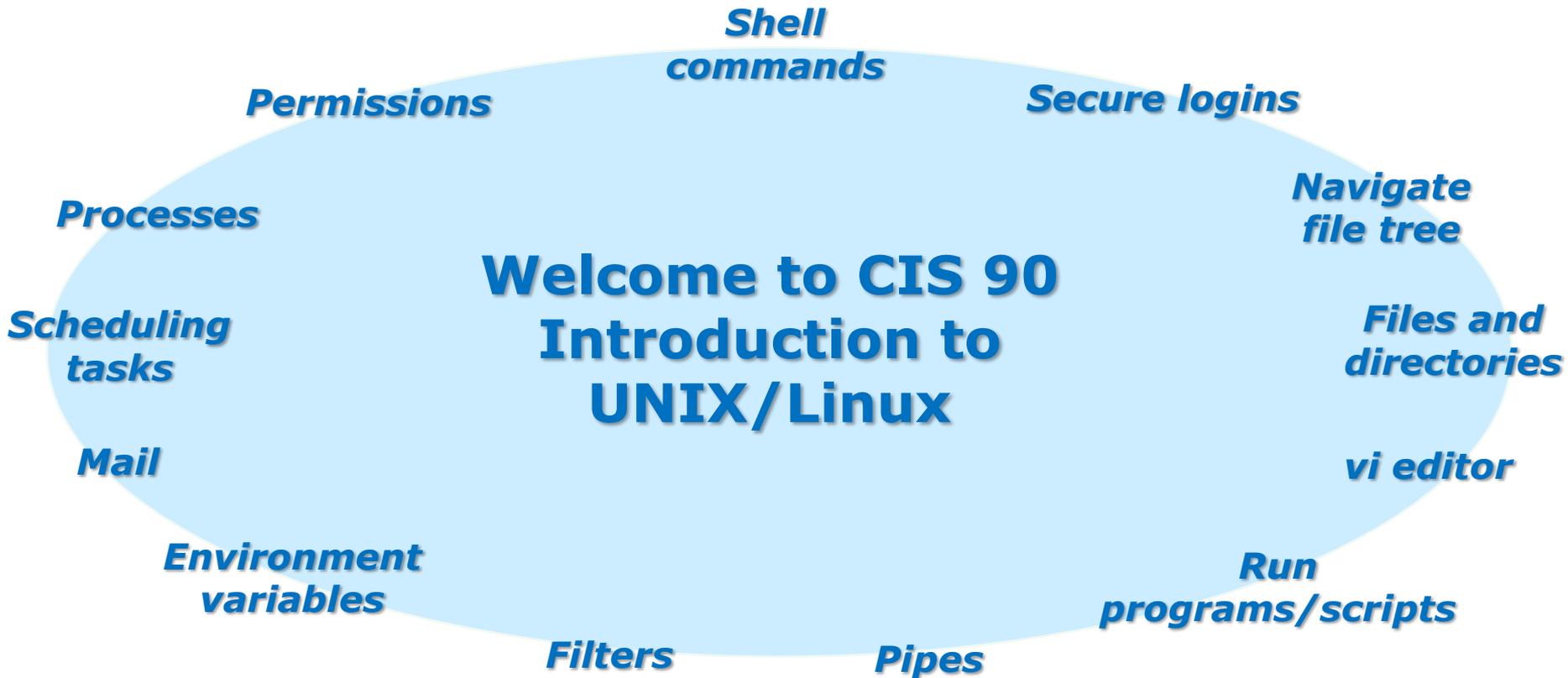




## Rich's lesson module checklist

- Slides
- Converted WB
  
- Flash cards
- Page numbers
- 1<sup>st</sup> minute quiz
- Web Calendar summary
- Web book pages
- Commands
  
- Lab 5 and X2 tested
- Put sonnet6 & bigfile in depot
  
- Real Test 1 staged on blackboard
- Real Test 1 system configured, tested and ready
  
- 9V backup battery for microphone
- Backup slides, CCC info, handouts on flash drive



### **Student Learner Outcomes**

1. Navigate and manage the UNIX/Linux file system by viewing, copying, moving, renaming, creating, and removing files and directories.
2. Use the UNIX features of file redirection and pipelines to control the flow of data to and from various commands.
3. With the aid of online manual pages, execute UNIX system commands from either a keyboard or a shell script using correct command syntax.

## 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/>)



## Student checklist for laying out screen when attending class

- Browse to the CIS 90 website Calendar page
  1. <http://simms-teach.com>
  2. Click CIS 90 link on left panel
  3. Click Calendar link near top of content area
  4. Locate today's lesson on the Calendar
  
- Download the presentation slides for today's lesson for easier viewing
  
- Click Enter virtual classroom to join CCC Confer session
  
- Connect to Opus using Putty or ssh command



## Student checklist for laying out screen when attending class

Google

CCC Confer

Downloaded PDF of Lesson Slides

The screenshot shows a virtual classroom interface with several overlapping windows:

- Blackboard Course Page:** Displays 'Rich's Cabrillo College CIS 90 Calendar' with a sidebar containing navigation options like 'Login', 'Flashcards', 'Admin', and 'CIS 90 (Spring) Course Home'.
- CCC Confer Virtual Classroom:** Features a video feed of 'Rich Simms', a 'PARTICIPANTS' list showing 'Rich Simms' and 'Benji Simms', and a 'CHAT' window with messages about textbooks.
- Google Maps:** A map window titled 'Cabrillo College' showing the campus location.
- Class Activity Window:** A central window titled 'CIS 90 - Lesson 1' with the heading 'Class Activity - Where are you now?' and a Google Maps search bar.
- Adobe Acrobat Pro:** A window titled 'cis90lesson01.pdf' showing a slide titled 'The CIS 90 System Playground' with a diagram of server racks.
- Terminal Window:** A window showing a login prompt for 'Opus' with a password field and a 'Welcome to Opus' message.

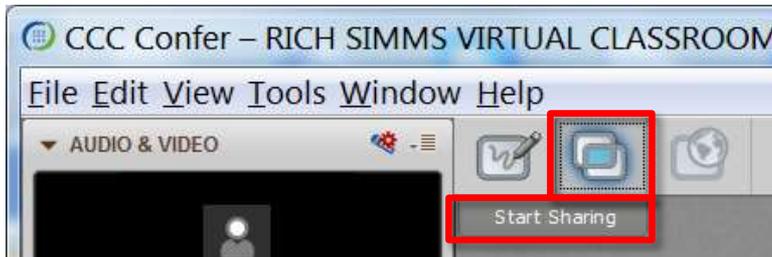
CIS 90 website Calendar page

One or more login sessions to Opus

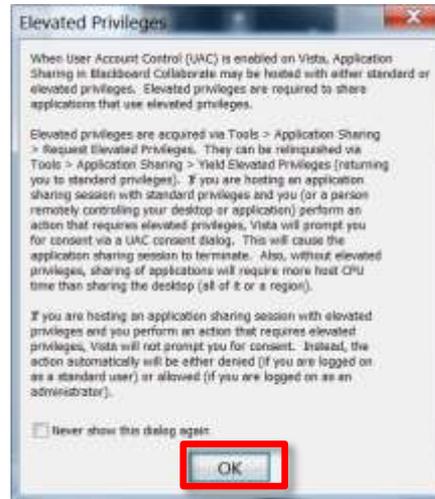


## Student checklist for sharing desktop with classmates

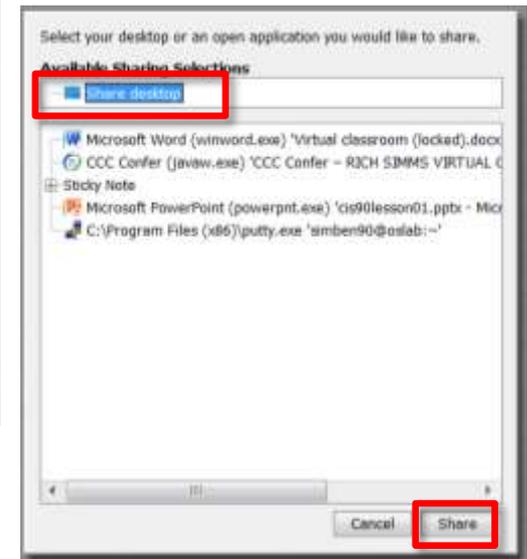
1) Instructor gives you sharing privileges



2) Click overlapping rectangles icon. If white "Start Sharing" text is present then click it as well.



3) Click OK button.



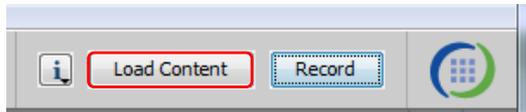
4) Select "Share desktop" and click Share button.



## Rich's CCC Confer checklist - setup

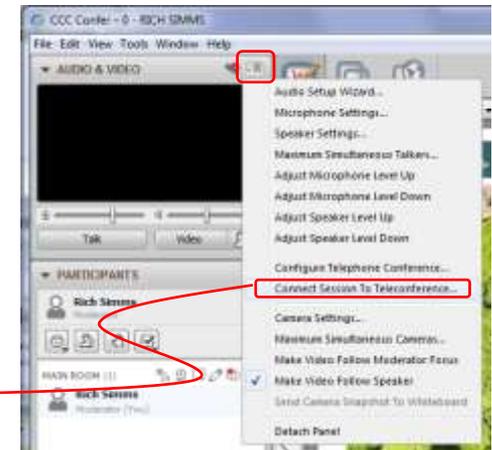


[ ] Preload White Board

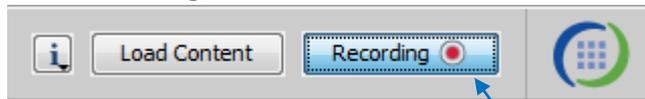


[ ] Connect session to Teleconference

*Session now connected to teleconference*



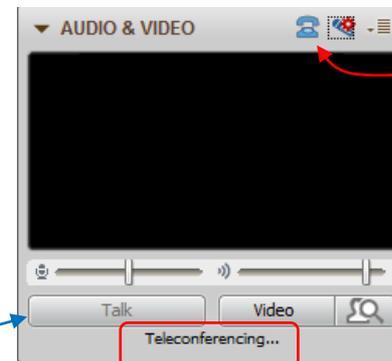
[ ] Is recording on?



*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*



## Rich's CCC Confer checklist - screen layout and share



foxit for slides

chrome

vSphere Client

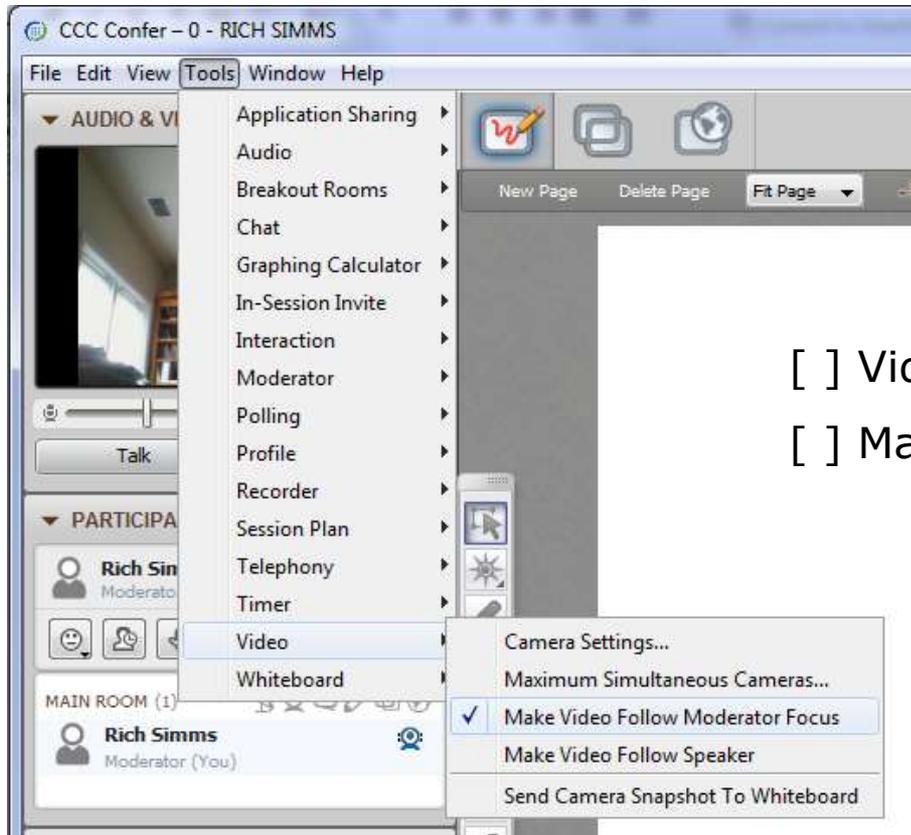
putty

[ ] layout and share apps





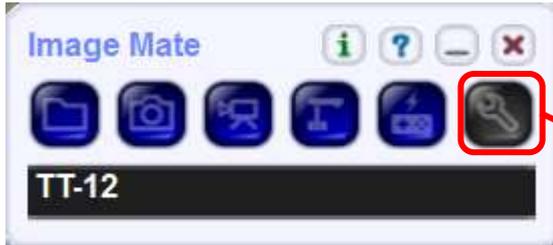
## Rich's CCC Confer checklist - webcam setup



- [ ] Video (webcam)
- [ ] Make Video Follow Moderator Focus



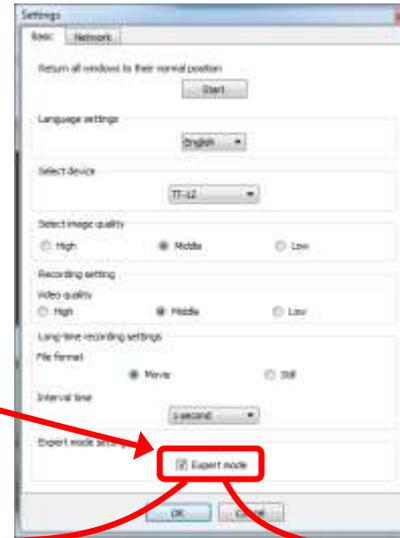
### Rich's CCC Confer checklist - Elmo



Elmo rotated down to view side table



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



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

*Quite interesting that they consider you to be an "expert" in order to use this button!*

Elmo rotated up to view white board





**Rich's CCC Confer checklist - universal fix**

Universal Fix for CCC Confer:

- 1) Shrink (500 MB) and delete Java cache
- 2) Uninstall and reinstall latest Java runtime
- 3) <http://www.cccconfer.org/support/technicalSupport.aspx>

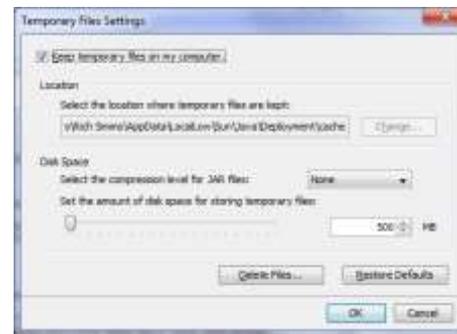
Control Panel (small icons)



General Tab > Settings...



500MB cache size



Delete these



Google Java download





# Start

# Sound Check

*Students that dial-in should mute their line using \*6 to prevent unintended noises distracting the web conference.*

*Instructor can use \*96 to mute all student lines.*



Instructor: **Rich Simms**

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

Passcode: **136690**



Chris



Jeremy



Jennifer



Cameron



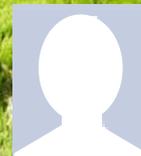
Joseph



Lisa



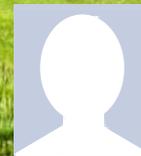
May



Sundance



Charlie



Sean



Brenda



Anthony



Will H.



Josh



Michael



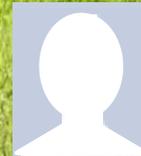
Danny



Vic



William D.



Taylor



Thomas



Stewart



Miguel



Akasha



Jairo



Tony



Joaquin

*Email me ([risimms@cabrillo.edu](mailto:risimms@cabrillo.edu)) a relatively current photo of your face for 3 points extra credit*

## First Minute Quiz

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

**No Quiz today ... test instead**

For credit email answers to:

[risimms@cabrillo.edu](mailto:risimms@cabrillo.edu)

within the **first few minutes of class**



# Managing Files

## Objectives

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

## Agenda

- Questions
- Housekeeping
- Managing files
- Creating directories
- Creating regular files
- Listing files
- Copying files
- Moving Files
- Removing files
- Linking files
- Assignment
- Wrap up
- Test #1



# 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.*

## Would you like some help learning Linux?



*If you would like some additional come over to the CIS Lab. There are student lab assistants and instructors there to help you.*

*Tess, Michael, and Paul are  
CIS 90 Alumni.*

*Mike Matera is the other  
Linux instructor.*

*I'm in there Mondays.*



The image shows a room with a thatched roof and a variety of items. In the foreground, there are several wooden stools around a small table. The walls are decorated with a world map, a poster about children's health, a 'Coffee!' poster, and a 'TOURIST MAP OF THE WORLD'. There are shelves with mugs, a wooden barrel, and a table with books or magazines. A red string of lights hangs across the top. A doormat in the bottom right corner has the text 'We're Proud To Serve'.

# Housekeeping

No labs due today

Test 1 will become available at 3:00 PM today

- Open book, open notes, open computer.
- You must work alone and not help or receive help from others.
- Online timed 60 minute test using Blackboard.
- Online "archive watching" students that work can take it later today but it must be completed by 11:59 PM.
- **Practice test systems shutdown 30 minutes before real test starts!**

Next week:

- Quiz 5
- Lab 5 is due

## Test 1 Instructions

### 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.

### INSTRUCTIONS:

Every question on the test was designed to be answered using one of the systems below.

1. `oslab.cis.cabrillo.edu` (port 2220) - This server is named Opus internally.
2. `sun-hwa-vii.cis.cabrillo.edu` (port 22)
3. `son-of-opus.simms-teach.com` (port 2220)
4. `arya-xx` (port 22) - Select xx for your own Arya.

Each question begins with [*system name*] so you know which system you should be logged into to answer the question.

All systems are accessible using ssh from opus. For sun-hwa-vii and son-of-opus login using your original opus credentials. For arya, use the generic cis90 account.

**If you get stuck on a question you can ask the instructor for the answer and forfeit the points.**

Please KEEP YOUR ANSWERS TO A SINGLE LINE ONLY !!

This test must be completed in one sitting. The submittal will be made automatically when the time is up. If you submit early by accident you will not be able to re-enter and continue. If that happens don't panic! Just email the instructor any remaining answers before the time is up.

# Don't Forget -- Perkins/VTEA Survey

**phpBB** Cabrillo College: Computer and Information Systems  
Forum for students in the Computer Networking and Systems Administration and/or Computer Support Specialist programs

Board Index • Cabrillo College Fall 2015 Courses • CIS 90 - Fall 2015

### Carl D. Perkins Vocational and Technical Education Act

Post Reply | Search this topic...

**Carl D. Perkins Vocational and Technical Education Act**  
By **Rich Stevens** • Tue Sep 22, 2015 2:34 pm

The Carl D. Perkins Vocational and Technical Education Act was originally authorized by Congress in 1964. 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 <http://www.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 CIS/CTS program!

- 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!***

**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 **UI** (Supplemental Security Income)

Yes  No **GA** (General Assistance)

Yes  No **Does your [SSN](#) qualify you for a tax waiver?**

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

Yes  No **Are you a [dependent care](#)er allowing Cabrillo to receive job aids?**

Yes  No **Have you moved in the preceding 30 months to attend, or to accompany parents or spouses to attend, temporary or seasonal employment or agricultural, dairy, or fishing?**

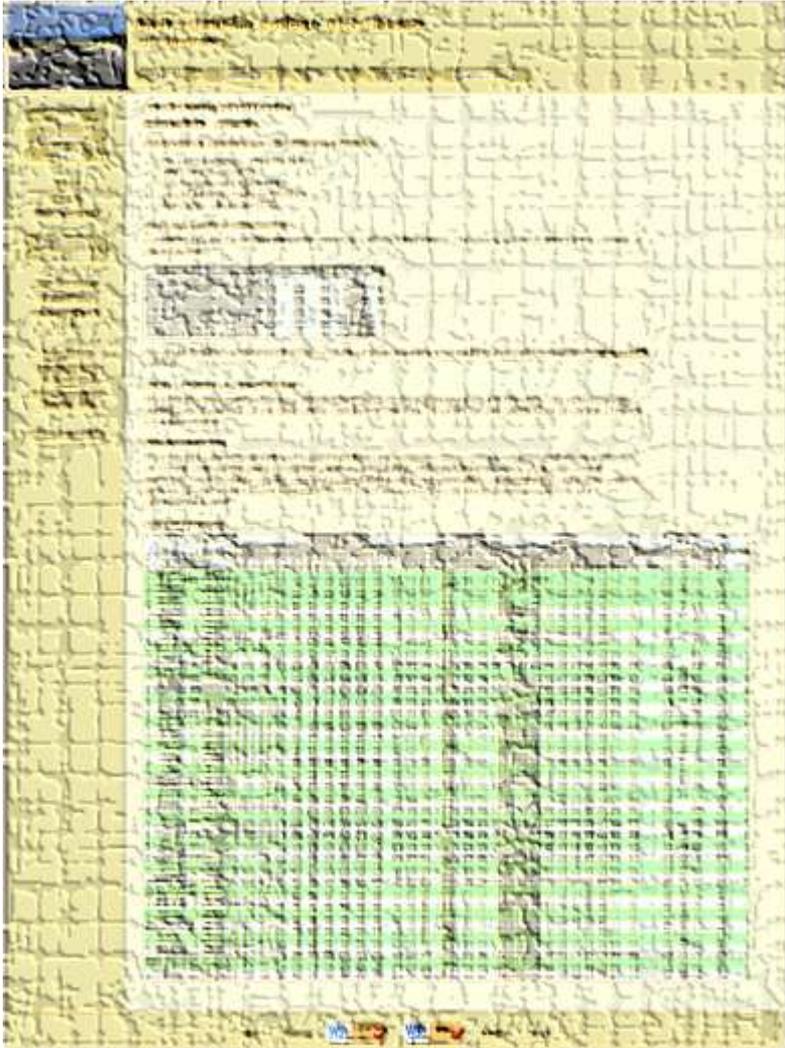
<http://oslab.cis.cabrillo.edu/forum/viewtopic.php?f=114&t=3863>

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

# 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.*

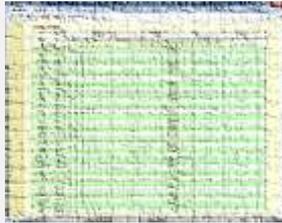


## Where to find your grades

*Send me your survey to get your LOR code name.*

### The CIS 90 website Grades page

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



#### Points that could have been earned:

4 quizzes:	12 points
4 labs:	120 points
1 forum quarter:	20 points
<b>Total:</b>	<b>152 points</b>

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

**At the end of the term I'll add up all your points and assign you a grade using this table**

### Or check on Opus

**checkgrades** *codename*  
(where *codename* is your LOR codename)



Written by Jesse Warren a past CIS 90 Alumnus

**grades** *codename*  
(where *codename* is your LOR codename)



Written by Sam Tindell a past CIS 90 Alumnus.  
Try his tips, schedule and forums scripts as well!



# Managing Files



## Lesson 6 commands for your toolbox:

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

Redirecting stdout:

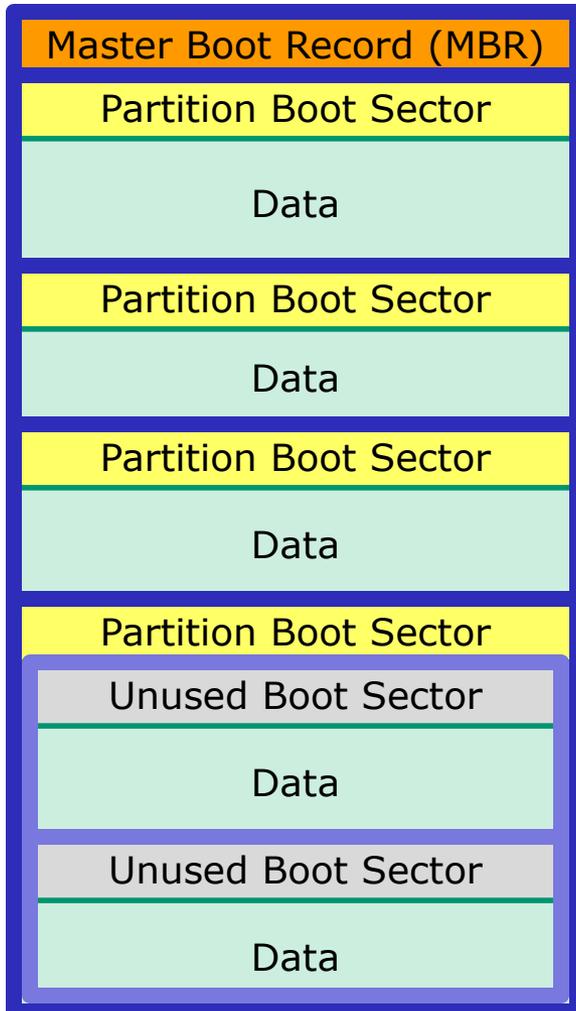
> ***filename*** - redirecting stdout to create/empty a file



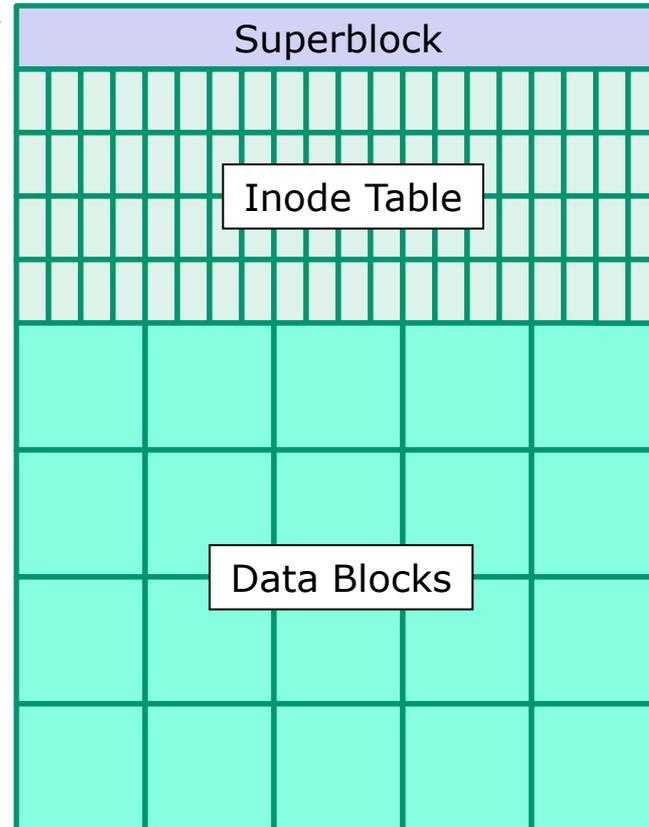
# File Systems

## 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





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.

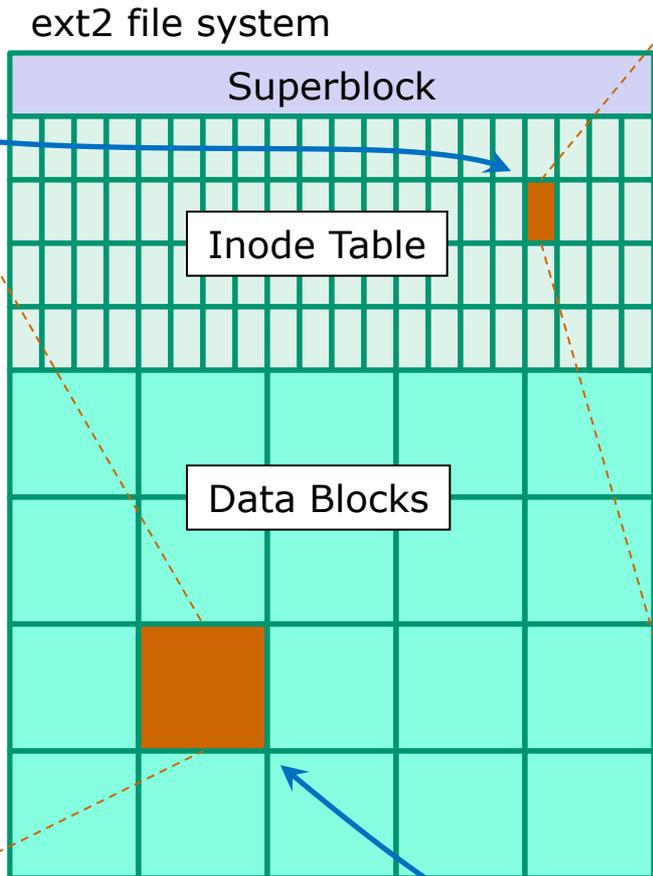
Now I don't want this to scare you, but my bunk mate has malaria. You remember Jeffrey Hardy? Their about to organize a searching party.

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 Directories

# Creating Directories

Command syntax:

**mkdir** *<new-directory-name>*

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

*Remember, everything in Unix is a file ... even directories!*



# Creating Directories

## The mkdir command

**mkdir** <*new-name*>

*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*

*The file size is 4096 bytes*



# Creating Directories

## The mkdir command

*Create multiple directories at once*

```

/home/cis90/simben $ mkdir redhat debian slackware
/home/cis90/simben $
/home/cis90/simben $
/home/cis90/simben $
/home/cis90/simben $
/home/cis90/simben $
/home/cis90/simben $
/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 directories themselves rather than their contents*

*Column 1 of the long listing shows the basic file type is a "d" for directory*

# Creating Directories

## 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
```

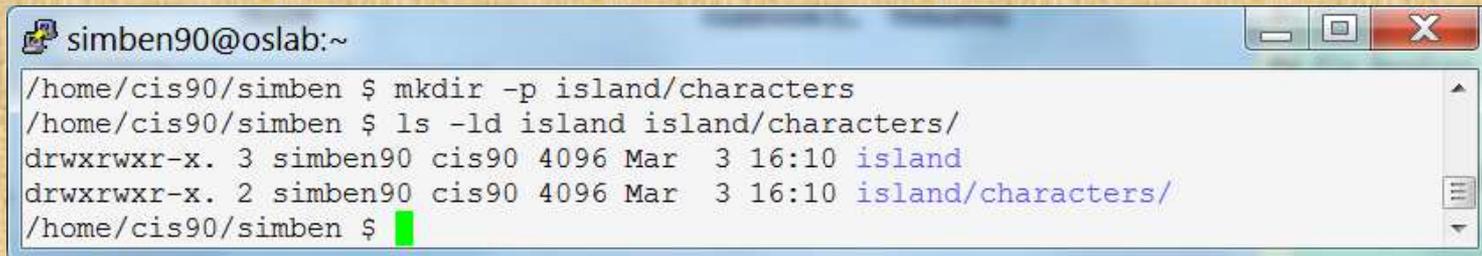
*Need to use the **p** option to create new parent directories as needed*

## Activity

In your home directory create a directory named *characters* inside a directory named *island* then list both new directories:

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

```
ls -ld island island/characters/
```



```
simben90@oslab:~  
/home/cis90/simben $ mkdir -p island/characters  
/home/cis90/simben $ ls -ld island island/characters/  
drwxrwxr-x. 3 simben90 cis90 4096 Mar  3 16:10 island  
drwxrwxr-x. 2 simben90 cis90 4096 Mar  3 16:10 island/characters/  
/home/cis90/simben $
```



# Creating Regular 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.

**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.*

```
/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*

*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
```

*Column 1 of the long listing shows the basic file type is a "-" for regular file*

# Creating Files

## The touch command

*The "last modified" timestamp 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
```

*Wait a few minutes then touch  
the file to update the timestamp*



```
/home/cis90/simben $ touch sawyer  
/home/cis90/simben $ ls -l sawyer  
-rw-rw-r-- 1 simben90 cis90 0 Mar 18 06:40 sawyer
```

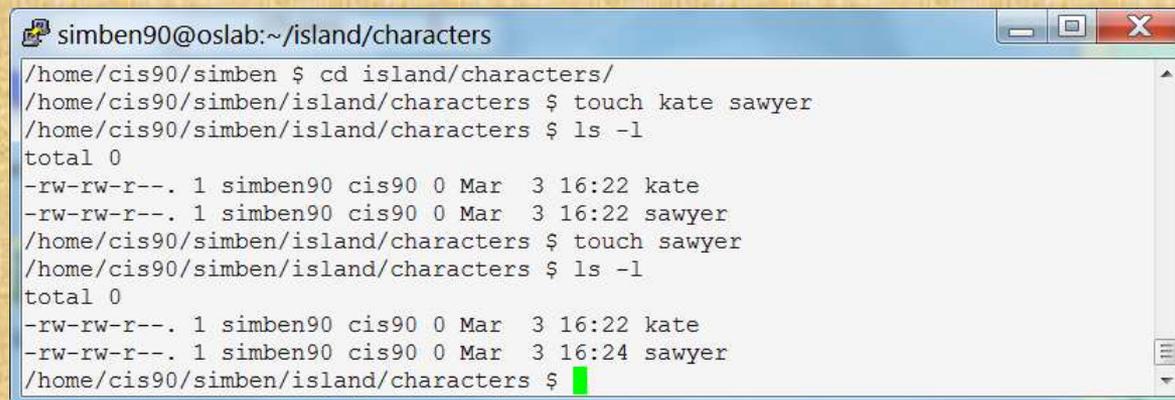
# Activity

In the directory named *characters* create 2 new files:

```
cd island/characters  
touch kate sawyer  
ls -l
```

*wait a minute or two*

```
touch sawyer  
ls -l
```



```
simben90@oslab:~/island/characters  
/home/cis90/simben $ cd island/characters/  
/home/cis90/simben/island/characters $ touch kate sawyer  
/home/cis90/simben/island/characters $ ls -l  
total 0  
-rw-rw-r--. 1 simben90 cis90 0 Mar  3 16:22 kate  
-rw-rw-r--. 1 simben90 cis90 0 Mar  3 16:22 sawyer  
/home/cis90/simben/island/characters $ touch sawyer  
/home/cis90/simben/island/characters $ ls -l  
total 0  
-rw-rw-r--. 1 simben90 cis90 0 Mar  3 16:22 kate  
-rw-rw-r--. 1 simben90 cis90 0 Mar  3 16:24 sawyer  
/home/cis90/simben/island/characters $
```

# 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!***

## Activity

- In the directory named *characters* create a new file:

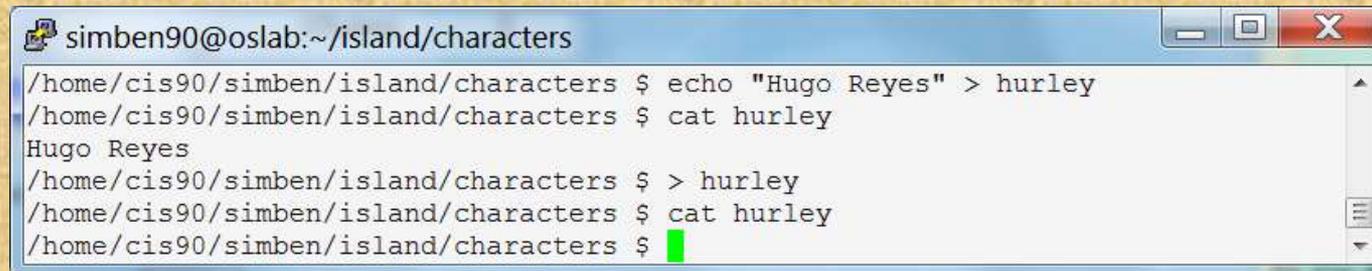
```
echo "Hugo Reyes" > hurley
```

- Print the new file with:

```
cat hurley
```

- Empty the file *hurley*

```
> hurley  
cat hurley
```



```
simben90@oslab:~/island/characters  
/home/cis90/simben/island/characters $ echo "Hugo Reyes" > hurley  
/home/cis90/simben/island/characters $ cat hurley  
Hugo Reyes  
/home/cis90/simben/island/characters $ > hurley  
/home/cis90/simben/island/characters $ cat hurley  
/home/cis90/simben/island/characters $
```

# Listing Files

# Listing Files & Directories

## *Short listing*

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

## *Short recursive listing*

```
/home/cis90/simben $ ls -R island  
island:  
characters
```

```
island/characters:  
hurley kate sawyer
```

# Listing Files & Directories

## *Long listing*

```
/home/cis90/simben $ ls -l island  
total 4  
drwxrwxr-x. 2 simben90 cis90 4096 Mar  3 16:53 characters
```

## *Long recursive listing*

```
/home/cis90/simben $ ls -lR island  
island/:  
total 4  
drwxrwxr-x. 2 simben90 cis90 4096 Mar  3 16:53 characters
```

```
island/characters:  
total 0  
-rw-rw-r--. 1 simben90 cis90 0 Mar  3 16:53 hurley  
-rw-rw-r--. 1 simben90 cis90 0 Mar  3 16:22 kate  
-rw-rw-r--. 1 simben90 cis90 0 Mar  3 16:24 sawyer
```

# Listing Files & Directories

## *Making a directory tree diagram*

```
/home/cis90/simben $ tree island
island
|-- characters
    |-- hurley
    |-- kate
    `-- sawyer

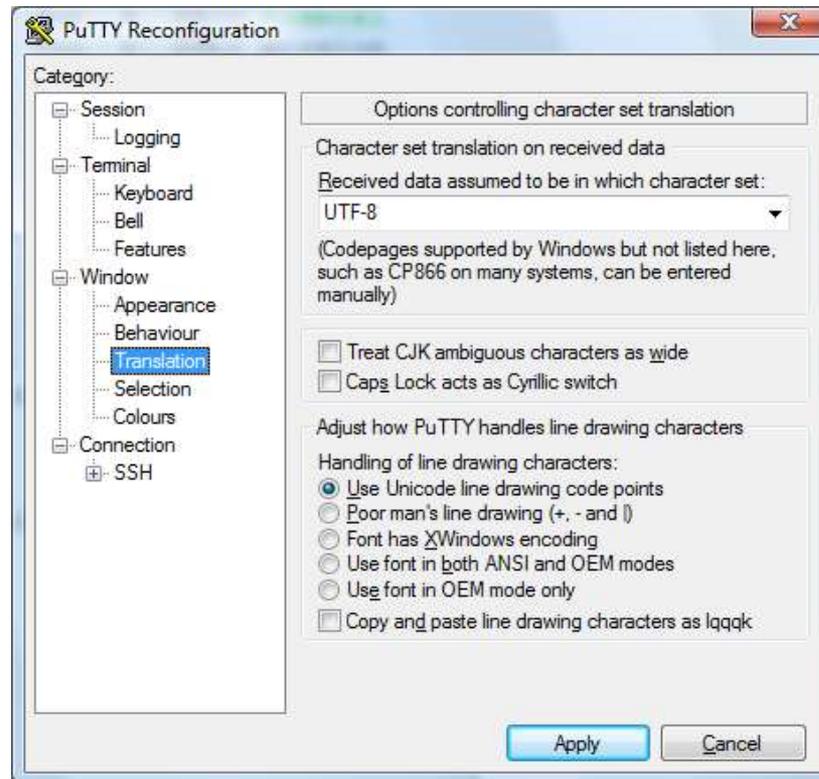
1 directory, 3 files
/home/cis90/simben $
```



*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*



## Activity

- 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



#Geniva

# 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
```

*oops ... typo!* 

```
/home/cis90/simben $ mv Powerege PowerEdge
```

*typo fixed by renaming file*

```
/home/cis90/simben $ ls iP* P[ra]* Pow*
iPad  iPhone  Pavilion  PowerEdge  ProLiant
```

*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`

# Assignment



**Lab 6: Reorganize Files**

The goal of this lab is to teach you pertinent shell system commands for copying, moving, renaming, creating and removing files within your home directory.

**Forum**

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

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

**Procedure**

Log on to this Open shell and then you have a command line shell at your machine. In turn, you are in your home directory by using this file. We are going to demonstrate how files in our home directory. This will involve finding files, understanding and creating files, moving. 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: Finding Directories**

1. Display a listing of the files in your home directory using the ls -l command.
2. How do you make more than one directories using the mkdir command?
  - How is the directory created after for listing our file and using the different command?
  - After the new directory's contents using the -a option of the ls command, do you see the two hidden files that were created with the directory?
  - 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 other called dir2.
  - 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!*



# Wrap up

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

## 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:

- Online timed test 60 minutes long
- Working students may take test this evening but it must be completed by 11:59 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

[ ] Remove practice test on Blackboard [\[at job T-1\]](#)

[ ] Shutdown practice test systems

```
cp /etc/nologin.bak /etc/nologin \[at job T-31\]
```

```
shutdown -P +10 "Practice test period ending." \[at job T-40\]
```

[ ] Add real test on Blackboard [\[at job T-0\]](#)

[ ] Remove password on real test on Blackboard [\[at job T-0\]](#)

[ ] Send email on Opus to students

```
/home/rsimms/cis90/test01/q29/mail-q29-T1 2 q \[at job T-0\]
```

[ ] Allow logins on real test systems

```
rm /etc/nologin \[at job T-0\]
```

[ ] Shutdown real test systems

```
cp /etc/nologin.bak /etc/nologin \[at splashdown-1\]
```

```
shutdown -P +10 "Test period ending." \[at splashdown-10\]
```



# Test 1



# Backup



# More Examples

# Practice Tasks

## For use on Opus

**Task 1:** Create a new directory named *birds* in your home directory. In that new directory create a sub-directory named *Antarctica*. Copy the *penguin* file from the */home/cis90/depot* directory to the new *Antarctica* directory. View the last line of the *penguin* file. Recursively remove the *birds* directory when finished.

```
/home/cis90/simben $ cd
/home/cis90/simben $ mkdir -p birds/Antarctica
/home/cis90/simben $ cp ../depot/penguin birds/Antarctica/
/home/cis90/simben $ tail -n1 birds/Antarctica/penguin
and envy your plumed pride.
/home/cis90/simben $ head -n1 birds/Antarctica/penguin
Magellanic Penguin
/home/cis90/simben $ rm -rf birds/
/home/cis90/simben $
```

*Performing Task 1 from the home directory using relative pathnames only.*

# Practice Tasks

## For use on Opus

**Task 1:** Create a new directory named *birds* in your home directory. In that new directory create a sub-directory named *Antarctica*. Copy the *penguin* file from the */home/cis90/depot* directory to the new *Antarctica* directory. View the last line of the *penguin* file. Recursively remove the *birds* directory when finished.

```
/home/cis90/simben $ cd
/home/cis90/simben $ mkdir birds
/home/cis90/simben $ cd birds
/home/cis90/simben/birds $ mkdir Antarctica
/home/cis90/simben/birds $ cd Antarctica
/home/cis90/simben/birds/Antarctica $ cp /home/cis90/depot/penguin .
/home/cis90/simben/birds/Antarctica $ tail -n1 penguin
and envy your plumed pride.
/home/cis90/simben/birds/Antarctica $ cd
/home/cis90/simben $ rm -rf /home/cis90/simben/birds/
/home/cis90/simben $
```

*Performing Task 1 by changing directories and using a mix of relative and absolute pathnames.*

# Practice Tasks

## For use on Opus

**Task 1:** Create a new directory named *birds* in your home directory. In that new directory create a sub-directory named *Antarctica*. Copy the *penguin* file from the */home/cis90/depot* directory to the new *Antarctica* directory. View the last line of the *penguin* file. Recursively remove the *birds* directory when finished.

```
/home/cis90/depot $ cd /home/cis90/depot/  
/home/cis90/depot $ ls penguin  
penguin  
/home/cis90/depot $ mkdir -p ~/birds/Antarctica  
/home/cis90/depot $ cp penguin ~/birds/Antarctica/  
/home/cis90/depot $ tail -n1 ~/birds/Antarctica/penguin  
and envy your plumed pride.  
/home/cis90/depot $ rm -rf ~/birds  
/home/cis90/depot $
```

*Performing Task 1 from the /home/cis90/depot directory and using the ~ for the home directory.*

# Practice Tasks

## For use on Opus

**Task 1:** Create a new directory named *birds* in your home directory. In that new directory create a sub-directory named *Antarctica*. Copy the penguin file from the `/home/cis90/depot` directory to the new *Antarctica* directory. View the last line of the *penguin* file. Recursively remove the *birds* directory when finished.

```
/home/cis90/depot $ cd /home/cis90/depot/  
/home/cis90/depot $ ls penguin  
penguin  
/home/cis90/depot $ mkdir -p ../simben/birds/Antarctica  
/home/cis90/depot $ cp penguin ../simben/birds/Antarctica/  
/home/cis90/depot $ tail -n1 /home/cis90/simben/birds/Antarctica/penguin  
and envy your plumed pride.  
/home/cis90/depot $ rm -rf /home/cis90/simben/birds/  
/home/cis90/depot $
```

*Performing Task 1 from the `/home/cis90/depot` directory and using relative and absolute pathnames.*