Lesson Module Checklist
- Slides –
- Flash cards –
- Page numbers -
- 1st minute quiz –
- Web Calendar summary –
- Web book pages -
- Commands –
- Lab tested –

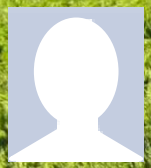
- Put sonnet6, bigfile in depot
- Real test 1 on standby –
- Forbidden web page updated -

- Set up Polycom phone/extension mics -
- Wireless lapel mic backup battery -
- Backup slides, CCC info, handouts on flash drive -

CIS 90 - Lesson 6

Instructor: **Rich Simms**
Dial-in: **888-450-4821**
Passcode: **761867**


Sean C.


Donald

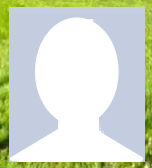

Carlile


Andrew


Sean Fa.


Carter

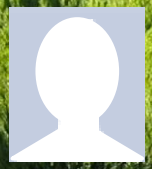

Sean Fy.


Dajan


Bryn


Rita


Kelly

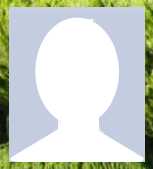

Ben


Ray


Fidel

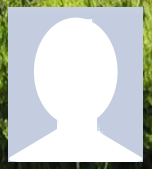

Michael

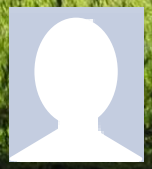

Evan


Josh


Carlos

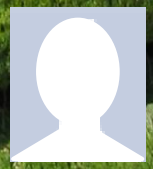

Gustavo


Jessica


Evie


Jacob


Humberto


Chad

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

Quiz

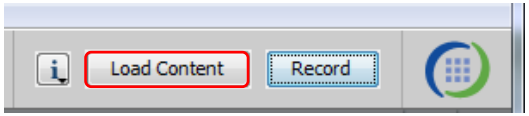
Please answer these questions **in the order** shown:

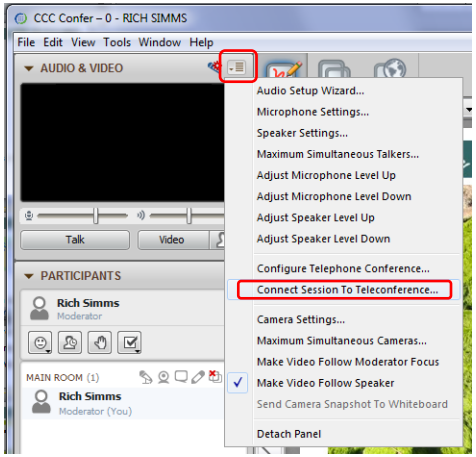
No Quiz today … test instead

email answers to: risimms@cabrillo.edu

(answers must be emailed within the first few minutes of class for credit)

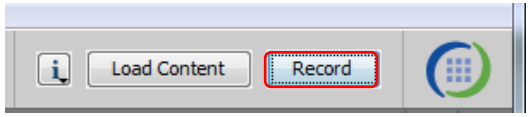
[ ] Load White Board with pics & quiz



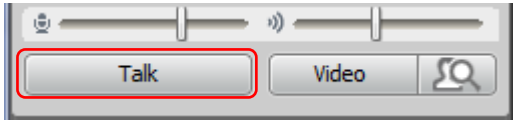


[ ] Connect session to Teleconference

[ ] Is recording on?



[ ] Toggle Talk button to not use Mic



[ ] Disable spelling on PowerPoint

[ ] Share slides, putties, Chrome and VLab

Managing Files

Objectives	Agenda
• Be able to create, copy, move, remove and link files	• Questions • Test Prep • Housekeeping • Managing files • Wrap up • Test

Questions

Previous material and assignment

1. Questions on previous material or labs?
2. Questions on the practice test?

Lab 4 Post Mortem

Lab 4 results

01 X
02 XXXXX
03 X
04 XXX
05 XXXXXXXXXXX
06 XXXXXXX
07 XXXX
08 XXXXXXXX
09 XXXX
10 XXX
11 XXXXXX
12 XXX
13 XXX
14 XX
15 XXXXXXXXX
16 X
17 XXXXXXXXXXX
18 X
19 XXXX
20 XXXXXXX
21 XXXXXXXXXX
22 XXXXXX
23 XXXXX
24 XXXXXX
25 XXXXXXXX

The most missed questions were 5, 8, 15, 17, 21 and 25

Lab 4 – Q5

5) Are any of your hidden files directories? If so, which ones?

Correct answers: ., .., .ssh

Incorrect answers:

.bash_history	*this is not a directory*
.plan	*this is not a directory*
none	*there are hidden directores*

Checking answer on Opus: *hidden files start with a .*

```
/home/cis90/simben $ ls -lad .*
drwxr-xr-x. 10 simben90 cis90  4096 Sep 27 12:37 .
drwxr-x---. 34 rsimms   cis90  4096 Sep 11 12:02 ..
-rw-------.  1 simben90 cis90 14518 Sep 30 09:01 .bash_history
-rw-------.  1 simben90 cis90    24 Jul 20  2001 .bash_logout
-rw-------.  1 simben90 cis90   354 Sep 17  2003 .bash_profile
-rw-------.  1 simben90 cis90   146 Jan 18  2004 .bashrc
-rw-------.  1 simben90 cis90    41 Sep 19 18:41 .lesshst
-rw-r--r--.  1 simben90 cis90    40 Jul 20  2001 .plan
drwx------.  2 simben90 cis90  4096 Aug  2 14:23 .ssh
```

Lab 4 – Q8

8) What is the inode number of the /home/cis90 directory?
Correct answers: 8966

Incorrect answers:

9011
9131
9063

Wrong directory chosen

Checking answer on Opus:

```
/home/cis90/simben $ ls -id /home/cis90
8966 /home/cis90
```

the /home/cis90 directory

The inode number

Lab 4 - Q15

15) What file or files in your home directory should you not view with the cat or more commands?

Correct answer: what_am_i

Checking answer on Opus:

*Use the **file** command to classify files. Use * which bash will expand to all non-hidden files in the directory as arguments to the file command.*

```
/home/cis90/simben $ file *
bigfile:          ISO-8859 English text, with overstriking
bin:              directory
dead.letter:      ASCII mail text
empty:            empty
Hidden:           directory
lab01.graded:     ASCII text
lab01-submitted:  ASCII text
lab02.graded:     ASCII English text
lab03.graded:     ASCII English text
Lab2.0:           directory
Lab2.1:           directory
letter:           ASCII English text
log:              ASCII text
```

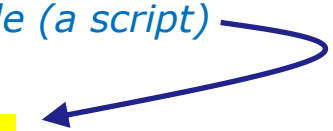
All these are text files or directories

Lab 4 - Q15

```
mbox:             ASCII mail text, with very long lines
Miscellaneous:    directory
mission:          ASCII English text
Poems:            directory
proposal1:        ASCII English text
proposal2:        ASCII English text
proposal3:        ASCII English text
small_town:       ASCII English text
spellk:           ASCII English text
text.err:         ASCII text
text.fxd:         ASCII text
timecal:          shell archive or script for antique kernel text
uhistory:         ASCII mail text
what_am_i:        data
/home/cis90/simben $
```

*These are all directories or text files ... EXCEPT **what_am_i** which contains binary data*

Even timecal is a text file (a script)



```
/home/cis90/roddyduk $ cat what_am_i
H/.>/..▒#.mailrc▒!.profile▒+HiddenLab3.1.1▒%Lab3.1.2f*Poems▒▒Reference8bigfile
$▒bi!mailfolders▒▒a_very_long_fi▒)lename▒▒errors▒/fruita▒greeting,▒letter▒▒mys
tery^proposal1▒,proposal2▒9timecal/home/cis90/roddyduk $
```

*Binary/data files contain unprintable characters that spew garbage on the screen. Text commands like **cat**, **head**, **more**, ..., etc. do not handle the unprintable characters gracefully. If your terminal gets messed up try the **reset** command.*

Lab 4 - Q17

17) What ls command-line allows you to see the permissions of your home directory while you are in your home directory?

Correct answer: ls -ld *(and many other solutions shown below)*

Use the d option in conjunction with the l option to show information on the directory itself rather than its contents.

Checking answer on Opus:

```
/home/cis90/simben $ ls -ld
drwxr-xr-x. 10 simben90 cis90 4096 Sep 27 12:37 .
```

or

```
/home/cis90/simben $ ls -ld /home/cis90/simben/
drwxr-xr-x. 10 simben90 cis90 4096 Sep 27 12:37 /home/cis90/simben/
```

or

```
/home/cis90/simben $ ls -ld $HOME
drwxr-xr-x. 10 simben90 cis90 4096 Sep 27 12:37 /home/cis90/simben
```

or

```
/home/cis90/simben $ ls -ld ~
drwxr-xr-x. 10 simben90 cis90 4096 Sep 27 12:37 /home/cis90/simben
```

permissions

Lab 4 - Q17

Or do a long listing of the parent directory and locate your home directory in the output

```
/home/cis90/simben $ ls -l /home/cis90
total 128
snipped
drwxr-xr-x.  9 noreva90 cis90 4096 Sep 27 12:37 noreva
drwxr-xr-x.  9 potjos90 cis90 4096 Sep 27 12:37 potjos
drwxr-xr-x. 12 ramcar90 cis90 4096 Sep 27 17:58 ramcar
drwxr-xr-x.  9 ramgus90 cis90 4096 Sep 27 12:37 ramgus
drwxr-xr-x.  9 rawjes90 cis90 4096 Sep 27 12:37 rawjes
drwxr-xr-x.  8 rodduk90 cis90 4096 Sep 12 22:40 rodduk
drwxr-xr-x. 10 simben90 cis90 4096 Sep 27 12:37 simben
drwxr-xr-x.  9 verevi90 cis90 4096 Sep 20 09:15 verevi
drwxr-xr-x.  9 wiljac90 cis90 4096 Sep 28 16:42 wiljac
drwxr-xr-x.  9 zamhum90 cis90 4096 Sep 27 12:37 zamhum
```

Lab 4 – Q21

21) What command will set your prompt to show your current working directory path and a $?

Correct answer: PS1=' $PWD $ '

Incorrect answers:

' $PWD $ ' *(bash will produce error message)*

PS1=$PWD $ *(bash will produce error message)*

PS1="$PWD $ " *(bash will expand $PWD too soon and produce static prompt)*

pwd *(doesn't change the prompt variable PS1)*

Checking answer on Opus:

```
/home/cis90/simben $ PS1="Fix me: $"
Fix me: $PS1='$PWD $ '
/home/cis90/simben $ cd /
/ $ cd
/home/cis90/simben $ cd ~/Poems/
/home/cis90/simben/Poems $
```

static prompt to test new prompt

dynamic prompt which changes as you move about file tree

Lab 4 - Q25

24) What file in the Miscellaneous directory is a symbolic link to another file?

25) What is the inode number of the file being linked to?

Correct answer: varies by student

The l code indicates this is a symbolic link

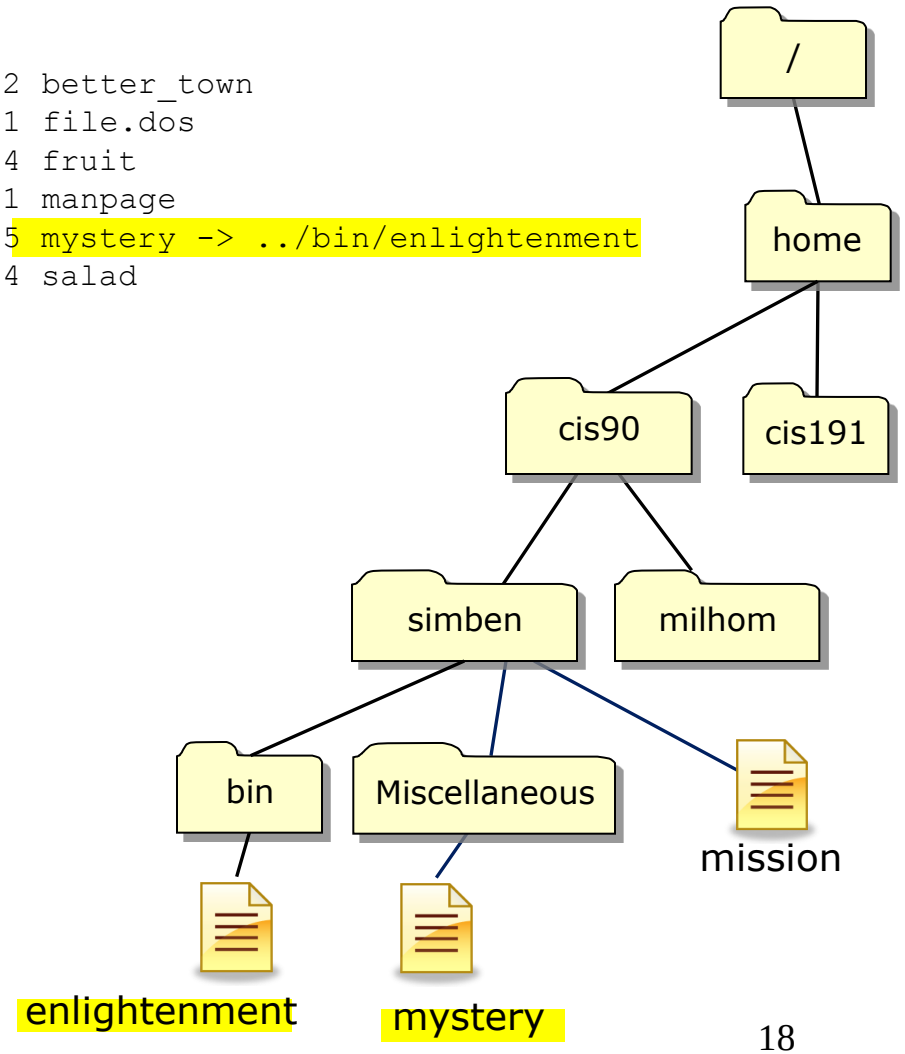
```
/home/cis90/simben $ ls -l Miscellaneous/
total 28
-rw-r--r--. 1 simben90 cis90  1382 Feb  1  2002 better_town
-rw-r--r--. 1 simben90 cis90   148 Jul 20  2001 file.dos
-rw-r--r--. 1 simben90 cis90    78 Oct 26  2004 fruit
-rw-r--r--. 2 simben90 cis90 10576 Jul 20  2001 manpage
lrwxrwxrwx. 1 simben90 cis90    20 Aug  1 16:55 mystery -> ../bin/enlightenment
-rw-r--r--. 1 simben90 cis90    78 Apr 17  2004 salad
/home/cis90/simben $ ls -i bin/enlightenment
12075 bin/enlightenment
/home/cis90/simben $
```

The mystery file is a symbolic link to the enlightenment file in the user's bin directory

Lab 4 - Q25

```
/home/cis90/simben $ ls -l Miscellaneous/
total 28
-rw-r--r--. 1 simben90 cis90  1382 Feb  1  2002 better_town
-rw-r--r--. 1 simben90 cis90   148 Jul 20  2001 file.dos
-rw-r--r--. 1 simben90 cis90    78 Oct 26  2004 fruit
-rw-r--r--. 2 simben90 cis90 10576 Jul 20  2001 manpage
lrwxrwxrwx. 1 simben90 cis90    20 Aug  1 16:55 mystery -> ../bin/enlightenment
-rw-r--r--. 1 simben90 cis90    78 Apr 17  2004 salad
/home/cis90/simben $ ls -i bin/enlightenment
12075 bin/enlightenment
/home/cis90/simben $
```

The mystery file is a symbolic link to the enlightenment file in the user's bin directory



Lab 4 - Extra Credit

Bonus) With what command can you list only the hidden files of your home directory?

```
/home/cis90/simben $ echo .*
. .. .bash_history .bash_logout .bash_profile .bashrc .lesshst .plan .ssh .vim
.viminfo
```

or

```
/home/cis90/simben $ ls -d .*
.    .bash_history  .bash_profile  .lesshst  .ssh  .viminfo
..   .bash_logout   .bashrc        .plan     .vim
```

or

```
/home/cis90/simben $ ls -a | grep '^\.'
.
..
.bash_history
.bash_logout
.bash_profile
.bashrc
.lesshst
.plan
.ssh
.vim
.viminfo
/home/cis90/simben $
```

This last command has several elements that we have not yet studied: piping, grep command and regular expressions.

Housekeeping

1. Check the Grades page on the website to monitor your progress in the class or run the **checkgrades** script using your coding name as the argument

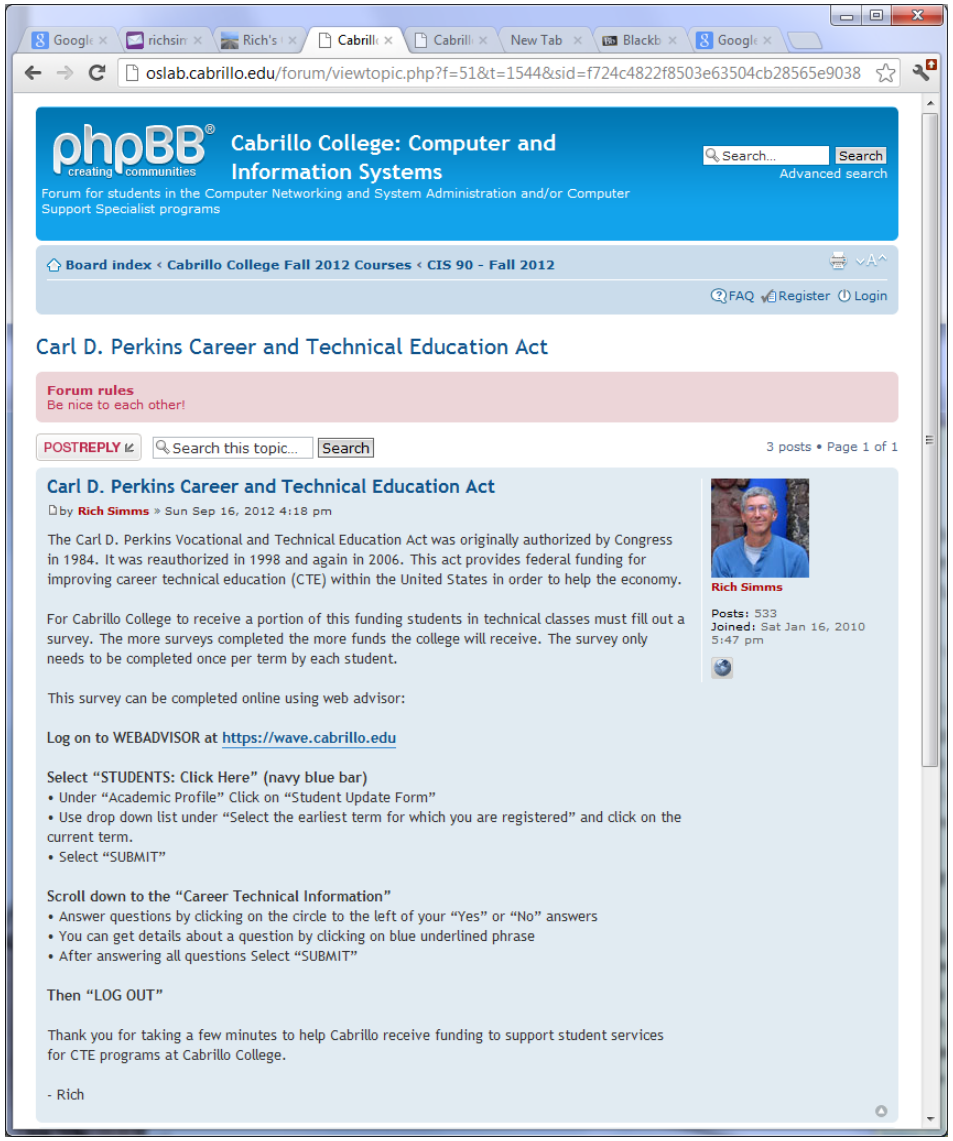
Code Name	Grading Choice	Quizzes & Tests													Forum				Labs										Project	Extra Credit	Total	Grade
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	T1	T2	T3	F1	F2	F3	F4	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10				
Max Points		3	3	3	3	3	3	3	3	3	3	30	30	30	20	20	20	20	30	30	30	30	30	30	30	30	30	30	60	90	560	
anborn	grade	2	2	2											20				19	19	26									8		
arador	P/NP														4				26	29	0	17								6		
aragorn	grade		3	3	3										4				21	27	28	15								9		
balrog	grade	1	3		2										16				21	16	2	18								3		
bombadil	grade	3	2	3	3										0				28	21	30	25								7		
boromir	grade		3	3	3										20					28	2	22								3		
celeborn	grade	3	2	3	3										20				30	29	30	29								15		
dori	grade	3		3	3										4					2	20	13								6		
elrond	grade														20					26	30									6		
eomer	grade	3	3	3	3										0				27	29	28	23								12		
gimli	grade														0				17	26		10										
goldberry	P/NP	3	2												8				23	0	30									4		
huan	grade	3	3	3	3										20				28	30	30	28								12		
ingold	grade	3	3	3	3										20				30	27	30	26								9		
marhari	grade														0					0	30									7		
pallando	grade		1	3	2										20				22	21	30	7								12		
quickbeam	grade	1	3		3										0				22	25	30											
samwise	P/NP		3												8				21	27	26									6		
saruman	grade	3	3	3	3										20					30	30	29								15		
sauron	grade	1		0	3										20				29	30	30	30								27		
shadowfax	grade	3	3	3	3										20				30	30	30	29								16		
smeagol	grade	3	3	3	3										20				30	30	30	28								13		
theoden	grade	2	2	2	3										20				28	25	30	16								16		
tulkas	P/NP	0	2	3	3										20				0	26	28	22								6		

If you don't have your code name then email me your completed Student Survey from Lesson 1 to get it.

2. /home/cis90/answers - check this directory on Opus for answers to completed labs.

3. Find graded work in your home directory

http://oslab.cabrillo.edu/forum/viewtopic.php?f=51&t=1544



You can still help Cabrillo College if you haven't already by filling out the VTEA survey online using WebAdvisor.

They won't accept them anymore after October 5th.

Send me an email that you completed this survey for 3 points extra credit.

Managing Files

New commands for your toolbox:

touch	*to make a file (or update the timestamp)*
mkdir	*to make a directory*
cp	*to copy a file*
mv	*to mv or rename a file*
rmdir	*to remove a directory*
rm	*to remove a file*
ln	*to create a link*

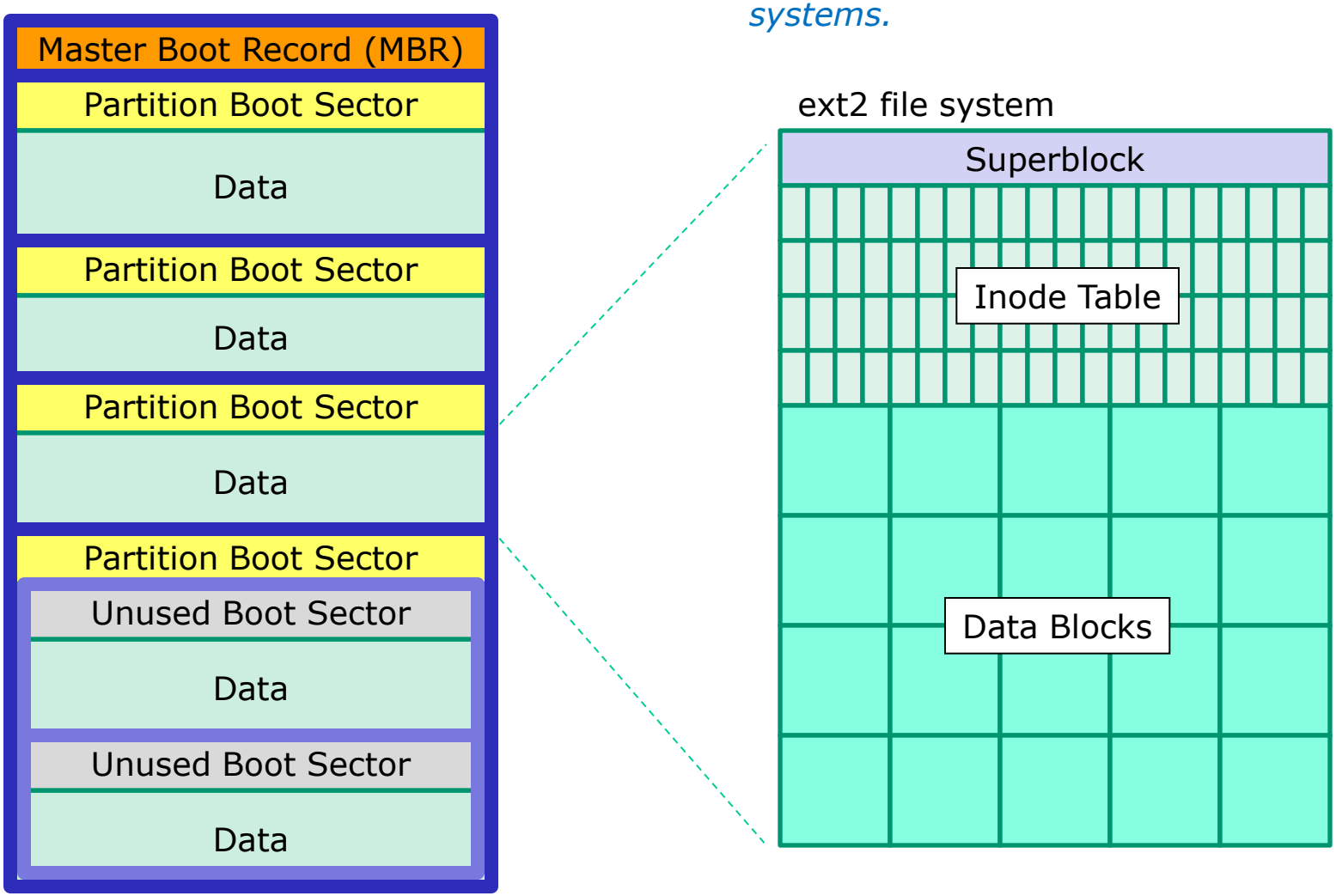
Redirecting stdout:

> *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.



UNIX Files
The three elements of a file

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

name

+

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

inode number — *inode information*

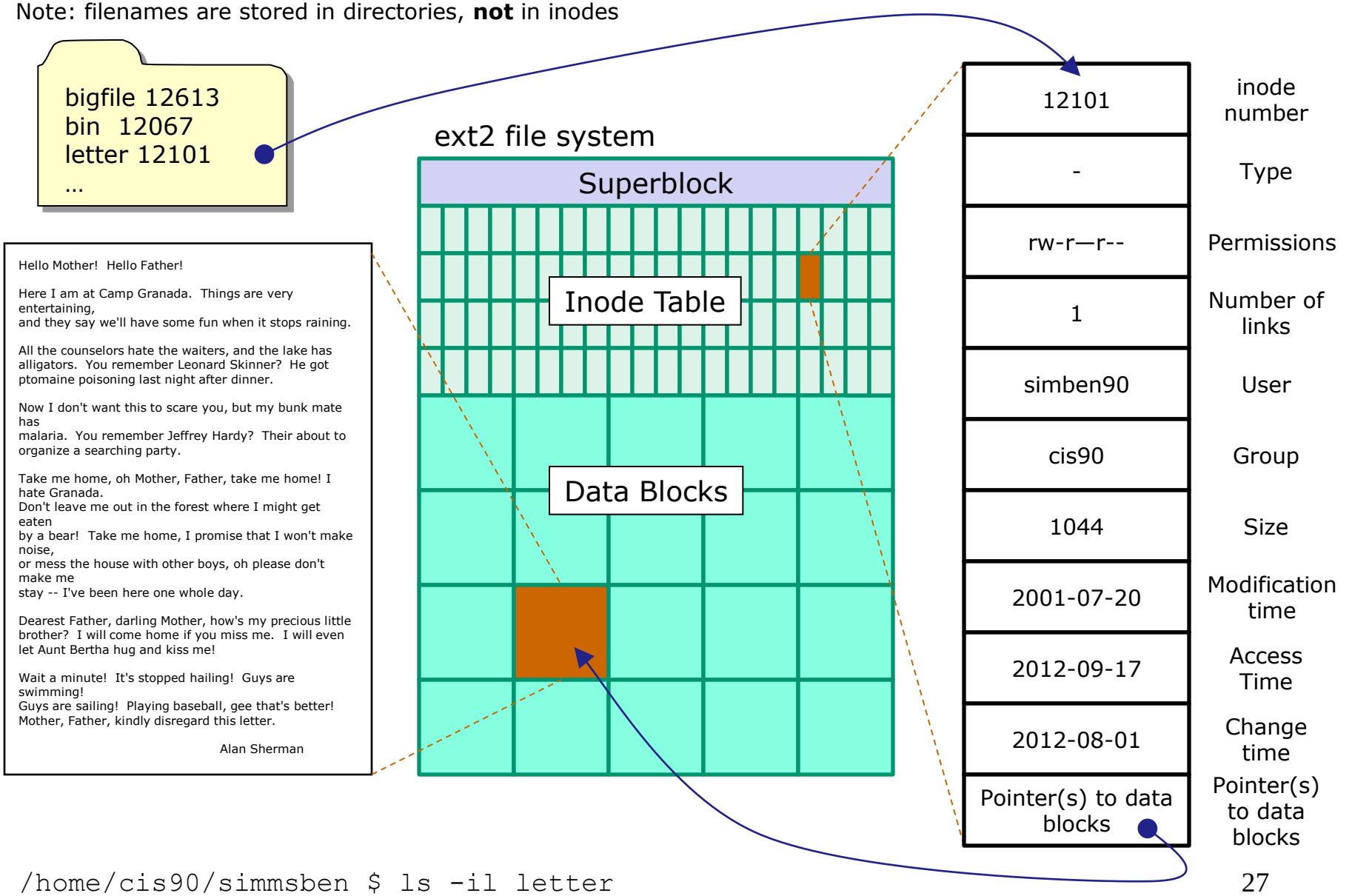
inode

+

```
/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

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




```
/home/cis90/simmsben $ ls -il letter
12101 -rw-r--r--. 1 simben90 cis90 1044 Jul 20  2001 letter
```

Creating Files

Managing the UNIX/Linux File System

Creating Files

Commands:

touch

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

mkdir

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

echo "*string***" > *filename***

- Creates or overwrites a text file

Managing the UNIX/Linux File System

Creating Files

touch 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/simmsben $ ls -l sawyer
ls: sawyer: No such file or directory

/home/cis90/simmsben $ touch sawyer
/home/cis90/simmsben $ ls -l sawyer
-rw-rw-r-- 1 simmsben cis90 0 Mar 18 06:34 sawyer
```

An empty file

Managing the UNIX/Linux File System

Creating Files

Multiple files can be created with one command

```
/home/cis90ol/simmsben $ 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/cis90ol/simmsben $ touch a  b  c
/home/cis90ol/simmsben $ ls -l a  b  c
-rw-rw-r-- 1 simmsben cis90ol 0 Mar 17 09:27 a
-rw-rw-r-- 1 simmsben cis90ol 0 Mar 17 09:27 b
-rw-rw-r-- 1 simmsben cis90ol 0 Mar 17 09:27 c
```

Managing the UNIX/Linux File System

Creating Files

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

```
/home/cis90/simmsben $ ls -l sawyer
-rw-rw-r-- 1 simmsben cis90 0 Mar 18 06:34 sawyer

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

Last modified

Managing the UNIX/Linux File System
Creating Files

mkdir creates one or more new directories

Create a new directory named island

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

/home/cis90/simmsben $ mkdir island
/home/cis90/simmsben $ ls -ld island
drwxrwxr-x 2 simmsben 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

file type is directory

Managing the UNIX/Linux File System

Creating Files

Create multiple directories at once

```
/home/cis90ol/simmsben $ mkdir redhat debian slackware
/home/cis90ol/simmsben $ ls -ld  redhat/ debian/  slackware/
drwxrwxr-x 2 simmsben cis90ol 4096 Mar 17 09:36 debian/
drwxrwxr-x 2 simmsben cis90ol 4096 Mar 17 09:36 redhat/
drwxrwxr-x 2 simmsben cis90ol 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

Managing the UNIX/Linux File System

Creating Files

Create nested directories (one directory inside another)

```
/home/cis90/simmsben $ mkdir  africa/ghana
mkdir: cannot create directory `africa/ghana': No
  such file or directory

/home/cis90/simmsben $ mkdir -p  africa/ghana
/home/cis90/simmsben $ ls africa
ghana
```

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

Managing the UNIX/Linux File System

Creating Files

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

Creating a file named accra and adding some text to it

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

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

Managing the UNIX/Linux File System

Creating Files


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

The redirection character > will create the file named if that file does not exist. ***If the file does exist though it will be emptied!***

Class Exercise

- In your home directory create a directory named *characters i*nside 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

Managing the UNIX/Linux File System

Short listing

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

Short recursive listing

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

island/characters:
hurley  kate  sawyer
```

Managing the UNIX/Linux File System

Long listing

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

Long recursive listing

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

island/characters:
total 24
-rw-rw-r-- 1 simmsben cis90 11 Mar 18 07:25 hurley
-rw-rw-r-- 1 simmsben cis90 22 Mar 18 07:25 kate
-rw-rw-r-- 1 simmsben cis90 11 Mar 18 07:25 sawyer
```

Managing the UNIX/Linux File System

Making a directory tree diagram

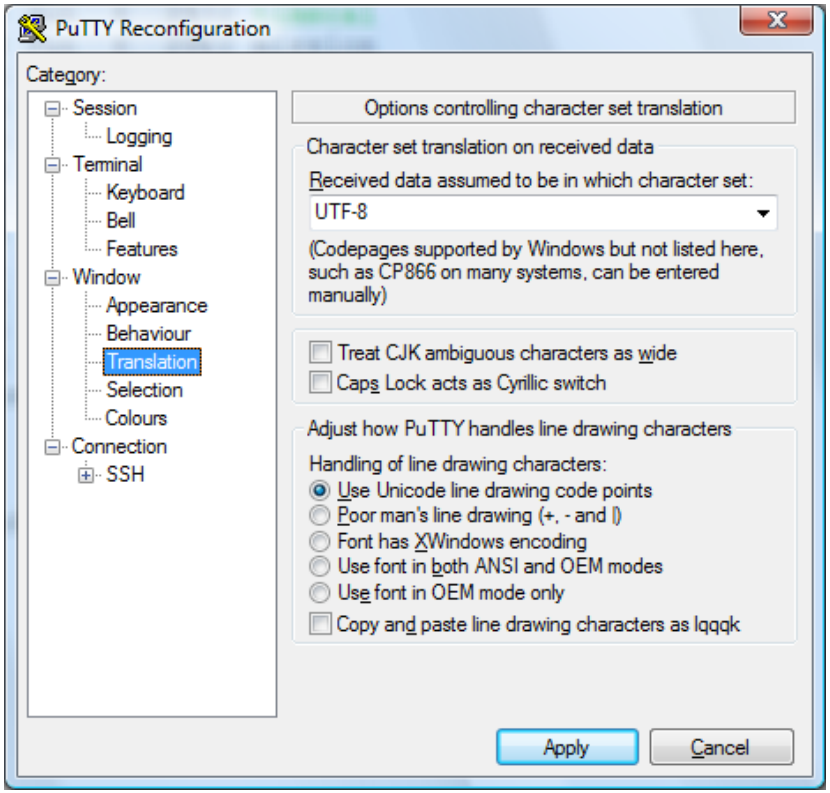
```
/home/cis90/simmsben $ tree island
island
`-- characters
    |-- hurley
    |-- kate
    `-- sawyer

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

Putty must be configured to use UTF-8 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
```

Copy Files

Managing the UNIX/Linux File System

Copying

Copying files:

cp *<source file> <target file>*

cp *<source file> <target directory>*

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

Where:

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

*are **absolute** or **relative** pathnames*

Managing the UNIX/Linux File System

Copying

Copying files:

cp *<source file> <target file>*

cp *<source file> <target directory>*

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

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

i *= warn before overwriting target files*
r *= recursive (copies all source sub-directories)*

Managing the UNIX/Linux File System

Copying a file

Commands:

Note: using a relative pathname

cp *<source file> <target file>*

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

Make a copy of the hurley file

```
/home/cis90/simmsben/island/characters $ cp hurley hurley.bak
/home/cis90/simmsben/island/characters $ ls
hurley  hurley.bak  kate  sawyer
/home/cis90/simmsben/island/characters $ cat hur*
Hugo Reyes
Hugo Reyes
```

Managing the UNIX/Linux File System

Copying multiple files to a directory

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

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

Make a new directory called backup

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

Copy three files to the new directory

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

List the three files in the new directory

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

Managing the UNIX/Linux File System

Copying multiple files to a directory

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

Copy all files to the new directory

```
/home/cis90/simmsben/island/characters $ cp * backup/
cp: omitting directory `backup'
```

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

List the four files in the new directory

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

Note: copying a file to an existing file will overwrite that file

Managing the UNIX/Linux File System

Copying

options: `-i -r`

`i` = warns before overwriting
`r` = recursive (copies all sub folders)

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

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

Managing the UNIX/Linux File System

Copying

options: `-i -r`

`i` = warns before overwriting
`r` = recursive (copies all sub directories)

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

Do recursive copy of the characters directory to a new players directory

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

players/backup:
hurley  hurley.bak  kate  sawyer
/home/cis90/simmsben/island $
```

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
cat kate
```

(Respond with **yes** to overwrite)

- Restore *kate* from the backup copy

```
cp kate2 kate
cat kate
```

moving files

Managing the UNIX/Linux File System
Moving

Moving files:

mv *<source file> <target file>*

mv *<source file> <target directory>*

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

Where:

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

*are **absolute** or **relative** pathnames*

Managing the UNIX/Linux File System

Moving

Moving files:

mv *<source file> <target file>*

mv *<source file> <target directory>*

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

options: -i

i = warn before overwriting

Managing the UNIX/Linux File System
Renaming

Commands:

mv *<original name> <new name>*

This is how you rename files in UNIX/Linux!

Managing the UNIX/Linux File System

Moving Examples

```
/home/cis90/simben $ touch iPhone iPad ProLiant Pavilion Powerege

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

Renaming a file

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

Make some sample directories

```
/home/cis90/simben $ mv iPhone Apple/
/home/cis90/simben $ mv iPad Apple/
```

Moving files one at a time into a directory

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

Moving multiple files at once into a directory

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

Moving one file into a directory

Managing the UNIX/Linux File System

Verifying file moves

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 absolute path

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

Use your own username

- 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

Managing the UNIX/Linux File System

Removing

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

Managing the UNIX/Linux File System

Remove a file

Remove a file:

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

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

Create four test files

Remove one of them

Managing the UNIX/Linux File System

Remove one or more files interactively

Remove one or more files interactively:

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

/home/cis90/simben $ ls junk*
junk3  junk4
```

Remove just the junk2 file

Verify it was removed

Managing the UNIX/Linux File System

Removing Directories

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  junk 2  junk3  junk4
ls junk*
```

- Remove one

```
rm  junk 1
ls junk*
```

- Remove the others

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

linking files

Managing the UNIX/Linux File System
Linking

Linking files:

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

options: -s

s = symbolic link (like Windows shortcut)

With UNIX there are hard and soft (symbolic) links

Managing the UNIX/Linux File System

Hard Links

Creating a "hard" link

ln *<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.*

Managing the UNIX/Linux File System

Hard Links

Creating a "hard" link

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

```
/home/cis90/simben $ ln sweets candy
/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
```

Hard link candy to dulces

same inode

number of hard linked files

```
/home/cis90/simben $ ln sweets bonbons
/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
```

Hard link bonbons to sweets

same inode

number of hard linked files

Managing the UNIX/Linux File System

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
(9 directories in /home/cis90/simben with a .. file)

```
/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
(41 directories in /home/cis90 with a .. file)

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

Note the hidden . and .. files are hard linked to their respective directories

Managing the UNIX/Linux File System

Hard Links

Creating a "hard" link

ln *<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

Managing the UNIX/Linux File System

Symbolic "Soft" Links

Creating a "soft" (symbolic) link

ln –s *<existing-name> <new-name>*

The s option for a symbolic link

Creating a symbolic link to the Apache configuration file

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

/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.

Managing the UNIX/Linux File System

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`

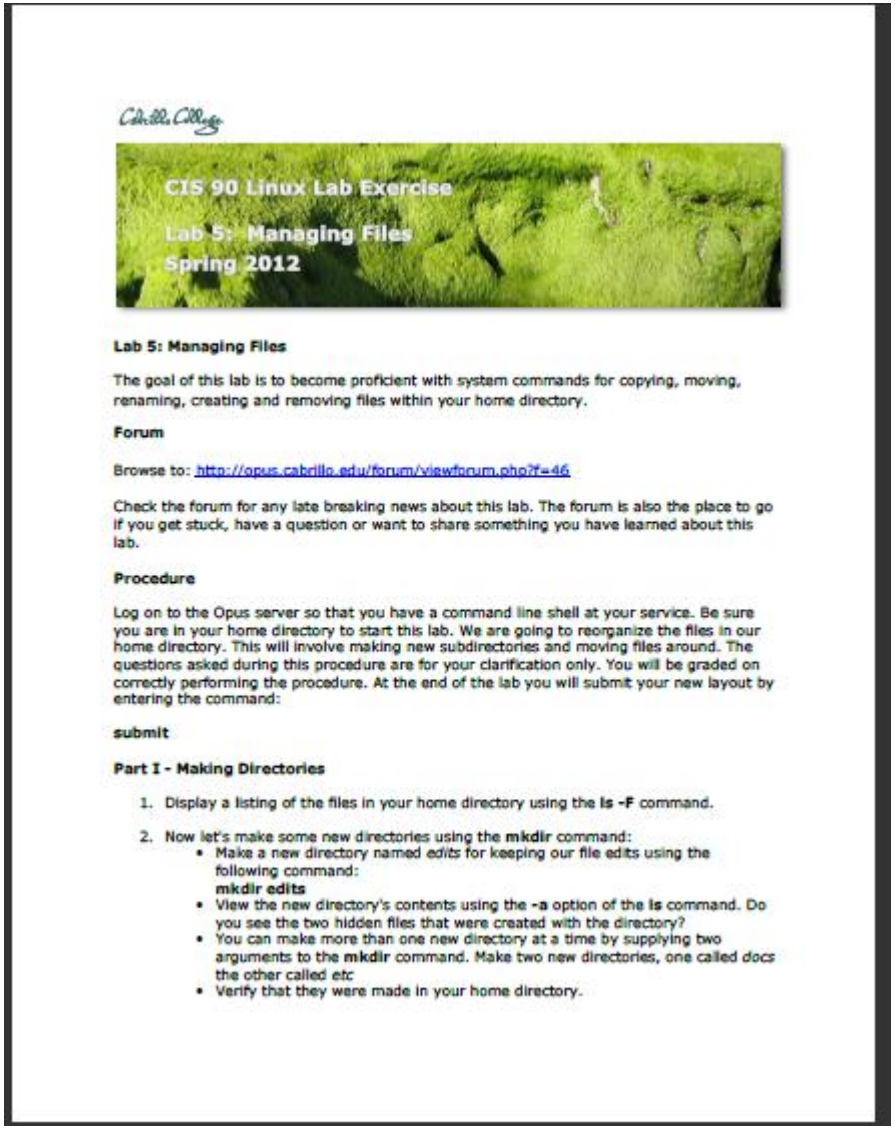
Wrap up (lesson)

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

Redirection:

>	redirects stdout



Cabrillo College

CIS 90 Linux Lab Exercise

Lab 5: Managing Files

Spring 2012

Lab 5: Managing 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

Browse to: http://opus.cabrillo.edu/forum/viewforum.php?f=46

Check the forum for any late breaking news about this lab. The 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 the Opus server so that you have a command line shell at your service. 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 clarification only. You will be graded on correctly performing the procedure. At the end of the lab you will submit your new layout by entering the command:

submit

Part I - Making Directories

1. Display a listing of the files in your home directory using the **ls -F** command.
2. Now let's make some new directories using the **mkdir** command:
   - Make a new directory named *edits* for keeping our file edits using the following command:
     mkdir edits
   - View 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 two arguments to the **mkdir** command. Make two new directories, one called *docs* the other called *etc*
   - 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

- Open book, open notes, open computer ... **HOWEVER, you must work alone. You may not share answers. You may not receive or give assistance to others.**
- Download and save the test to your computer. Fill out the form, save it and email it as an attachment to **risimms@cabrillo.edu** using your regular (non-Opus) email. Please cc: yourself and verify you actually sent a non-blank, completed test to be graded.
- Everyone should submit their test (completed or not) by the end of class.
- If you need extra time, you can submit again by no later than 11:59PM. Only the last submittal will be graded.

Notes to instructor

[ ] Send email on Opus to students

```
~/cis90/test01/q14/mail-q14-real
```

[ ] Logoff Sun-Hwa users

```
skill -KILL -v pts/n
```

[ ] Create T1 trouble on Sun-Hwa

```
#./trouble-T1
```

[ ] Change file permissions on Test 1

```
simms-teach.com 644
```


Test 1

Backup

Lab 4 – Q1

2) Write down the absolute path of your home directory.

Correct answer: /home/cis90/simben
OK answer: ~

Incorrect answers:

$HOME *That is the correct variable, but question asks for an absolute path*

/home/cis90/*xxxxxx* $ *Close, that is the prompt and it fails ls test*

home/cis90/*xxxxxx* *Close, fails the ls test, absolute pathnames must start with /*

/home/cis90/xxxxxx90/ *Close, fails the ls test, drop the "90"*

Using **ls** check on Opus:

```
/home/cis90/simben $ ls -d /home/cis90/simben/
/home/cis90/simben/
/home/cis90/simben $
```

Lab 4 - Q2

2) Relative to your home directory, what is the pathname of the tiger file in the Blake subdirectory?

Correct answer: Poems/Blake/tiger
OK answer: ./Poems/Blake/tiger

Incorrect answers:

tiger
/Poems/Blake
../../cis90ol/cis90/Poems/Blake/tiger
cis90ol/simmsben/Poems/Blake/tiger

Fails the ls test

ls /Poems/Blake/tiger *(pathnames do not include commands)*

Using **ls** test on Opus:

```
/home/cis90/simben $ ls Poems/Blake/tiger
Poems/Blake/tiger
/home/cis90/simben $
```

Lab 4 - Q5

5) Are any of your hidden files directories? If so, which ones?

Correct answers: ., .., .mozilla, .ssh

Incorrect answers:

Poems/
Lab2.0/
Lab2.1
Hidden/
bin
Miscellaneous

Not hidden
(hidden files have names that start with .)

.bash_history
.bash_profile
.emacs
.plan

Not directores

Lab 4 - Q5

*Files that are **directories** (1st column=d) AND **hidden** (filenames start with .)*

```
/home/cis90/simben $ ls -ald .*
drwxr-xr-x 10 simben90 cis90  4096 Mar  7 14:19 .
drwxr-x--- 42 rsimms   cis90  4096 Mar  6 08:17 ..
-rw-------  1 simben90 cis90 16776 Mar  9 09:49 .bash_history
-rw-------  1 simben90 cis90    24 Jul 20  2001 .bash_logout
-rw-------  1 simben90 cis90   354 Sep 17  2003 .bash_profile
-rw-------  1 simben90 cis90   146 Jan 18  2004 .bashrc
-rw-r--r--  1 simben90 cis90   515 Feb  4 16:33 .emacs
-rw-------  1 simben90 cis90    65 Mar  9 07:45 .lesshst
drwxr-xr-x  4 simben90 cis90  4096 Feb  4 16:33 .mozilla
-rw-r--r--  1 simben90 cis90    40 Jul 20  2001 .plan
drwx------  2 simben90 cis90  4096 Feb  8 15:58 .ssh
-rw-------  1 simben90 cis90  1222 Feb 26 19:20 .viminfo
/home/cis90/simben $
```

Lab 4 - Q5

*Files that are **directories** (1st column=d) AND **hidden** (filenames start with .)*

```
/home/cis90/simben $ ls -aF
./              bin/              Lab2.0/          .plan        text.fxd
../             dead.letter       Lab2.1/          Poems/       timecal*
accounts@       .emacs            .lesshst         proposal1    uhistory
allfiles17137   empty             letter           proposal2    .viminfo
.bash_history   Hidden/           log              proposal3    what_am_i
.bash_logout    lab01.graded      mbox             small_town
.bash_profile   lab01-submitted   Miscellaneous/   spellk
.bashrc         lab02.graded      mission          .ssh/
bigfile         lab03.graded      .mozilla/        text.err
/home/cis90/simben $
```

Lab 4 - Q10

10) What's the name of the largest text file in your home directory?

Correct answer: varies by student

Use the l (for long) and S (for size) options to sort by size

```
/home/cis90/simben $ ls -lS
total 396
-rw------- 1 simben90 cis90 124804 Mar  4 20:09 mbox
-r-------- 1 simben90 staff  27073 Mar  1 10:15 lab03.graded
-rw-rw-r-- 1 simben90 cis90  25390 Feb 29 22:18 uhistory
-rw-r--r-- 2 simben90 cis90  10576 Jul 20  2001 bigfile
< snipped >
/home/cis90/simben $ file mbox lab03.graded uhistory bigfile
mbox:          ASCII mail text, with very long lines
lab03.graded: ASCII English text
uhistory:      ASCII mail text
bigfile:       ISO-8859 English text, with overstriking
/home/cis90/simben $
```

Use the file command to identify text files

The biggest text file for simben90 is mbox at 124,804 bytes

Lab 4 - Q19

19) From your home directory what is the relative path to sonnet1?

Correct answer: Poems/Shakespeare/sonnet1

Incorrect answers:
/Poems/Shakespeare /sonnet1 *(multiple arguments, fails ls test)*
Poems/Shakespeare/ *(incomplete path, must include filename)*
/home/cis90/simben/Poems/Shakespeare/sonnet1 *(not a relative path)*

cd with no arguments takes you to your home directory

```
/home/cis90/simben $ cd
/home/cis90/simben $ ls Poems/Shakespeare/sonnet1
Poems/Shakespeare/sonnet1
```

Always check your pathname by using it as an argument to the ls command

Lab 4 - Q9

9) Who is the owner of your home directory?

Correct answers: your username, e.g. simben90, milhom90, etc.

Incorrect answers:

- /home/cis90/simben *That's not a username (it's a home directory)*
- simben *That is an incomplete user name*
- rsimms *Not the owner*
- cis90 *Not the owner*

Checking answer on Opus:

cd with no arguments takes you to your home directory

```
/home/cis90/simben $ cd
/home/cis90/simben $ ls -ld
drwxr-xr-x 10 simben90 cis90 4096 Mar  7 14:19 .
```

owner *group*

```
/home/cis90/simben $ ls -ld /home/cis90/simben/
drwxr-xr-x 10 simben90 cis90 4096 Mar  7 14:19 /home/cis90/simben/
```

owner *group*

Lab 4 - Q9

```
/home/cis90/simben $ ls -l /home/cis90
total 320
drwxr-xr-x 10 ahrmat90 cis90 4096 Mar 12 13:44 ahrmat
drwxr-xr-x  2 rsimms   cis90 4096 Mar  8 21:59 answers
drwxr-x---  3 rsimms   cis90 4096 Mar  7 06:34 bin
drwxr-xr-x  9 blerav90 cis90 4096 Mar  8 22:02 blerav
drwxr-xr-x  9 bodian90 cis90 4096 Mar  8 22:02 bodian
drwxr-xr-x 10 bunsol90 cis90 4096 Mar  7 15:39 bunsol
drwxr-xr-x  9 cheken90 cis90 4096 Feb 16 13:17 cheken
drwxr-xr-x  9 cofcol90 cis90 4096 Mar  8 22:02 cofcol
drwxr-xr-x 10 colabd90 cis90 4096 Mar  8 22:02 colabd
drwxr-xr-x 10 deltas90 cis90 4096 Mar  8 22:02 deltas
drwxr-xr-x  4 rsimms   cis90 4096 Feb 28 13:03 depot
drwxr-xr-x  9 doucor90 cis90 4096 Mar  8 22:02 doucor
drwxr-xr-x  9 flamat90 cis90 4096 Mar  8 22:02 flamat
drwxr-xr-x  9 gueous90 cis90 4096 Mar  8 22:02 gueous
drwxr-xr-x  9 guest90  cis90 4096 Feb 19 23:35 guest
< snipped >
```