Lesson Module Checklist
- Slides
- WB

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

- Dog script examples ready
- Power on Sun-Hwa and remove trouble

- Materials uploaded
- Backup slides, CCC info, handouts on flash drive
- Check that backup room headset is charged
- Spare 9v battery for mic

Introductions and Credits

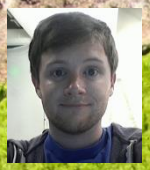
Jim Griffin
- Created this Linux course
- Created Opus and the CIS VLab
- Jim's site: http://cabrillo.edu/~jgriffin/

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/)

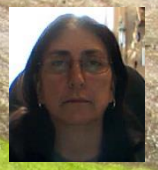
CIS 90 - Lesson 14

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


Riley


Solomon


Dillon

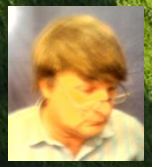

Pam


Liz


Gabe


Michael L.


Ariana


Perky


Samantha

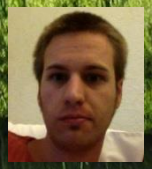

Paul S.


Hilario


Tyrone


Ben C.

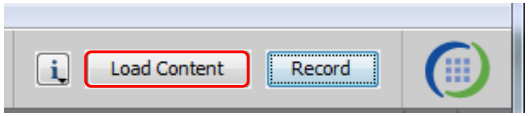

Jordan


Mark


Jay

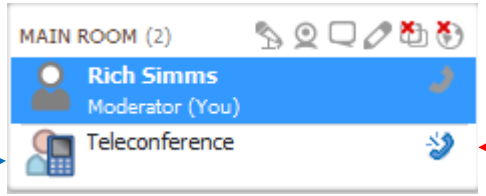
Email me (risimms@cabrillo.edu) a relatively current photo of your face for 3 points extra credit

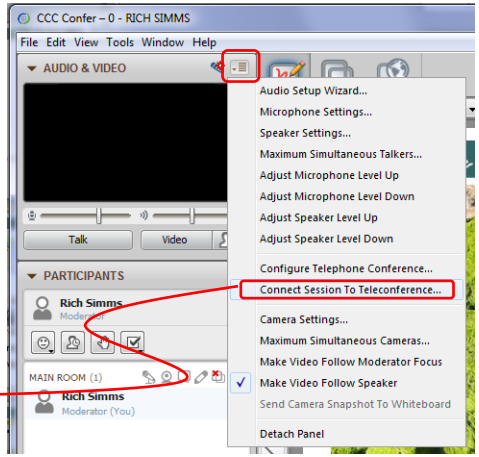
[ ] Preload White Board with *cis*lesson??*-WB*



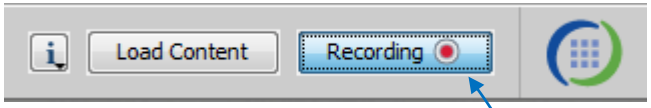
[ ] Connect session to Teleconference

Session now connected to teleconference





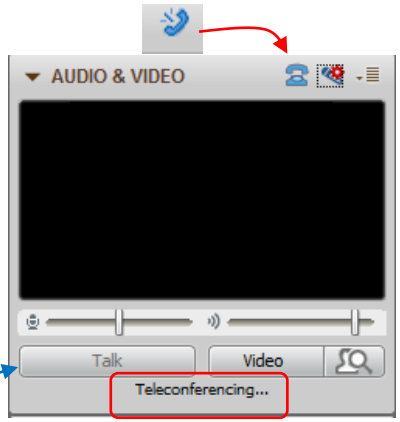
[ ] Is recording on?



Red dot means recording

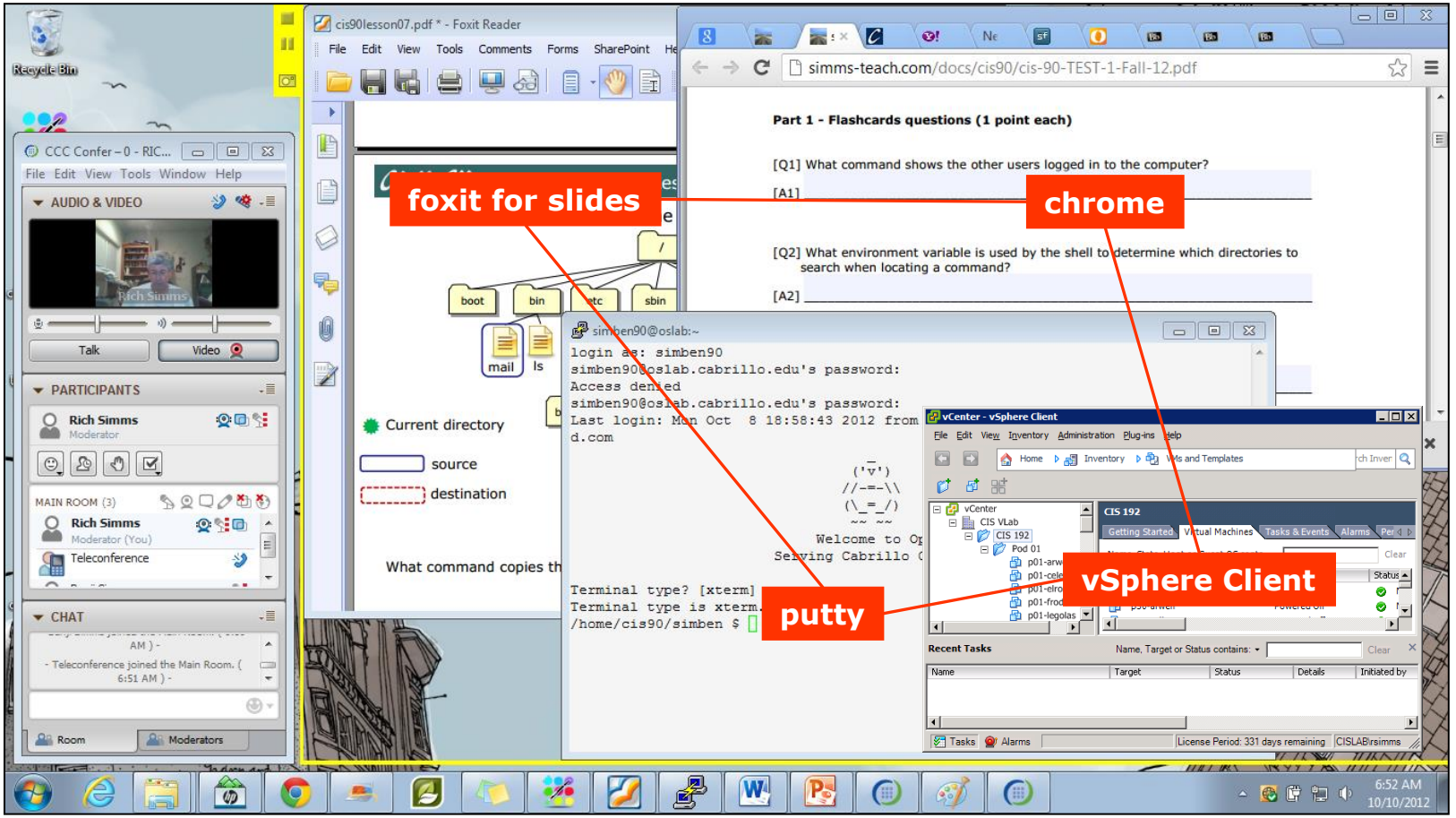
[ ] Use teleconferencing, not mic

Should be greyed out



CCC Confer

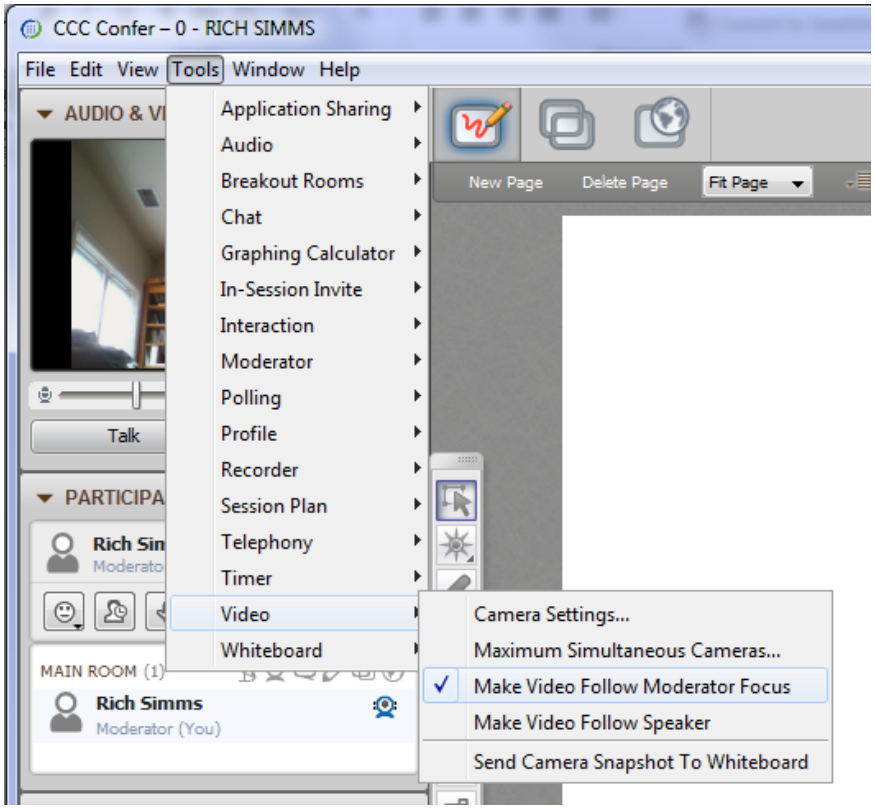
- [ ] **Video (webcam) optional**
- [ ] **layout and share apps**



[ ] Video (webcam) optional

[ ] Follow moderator

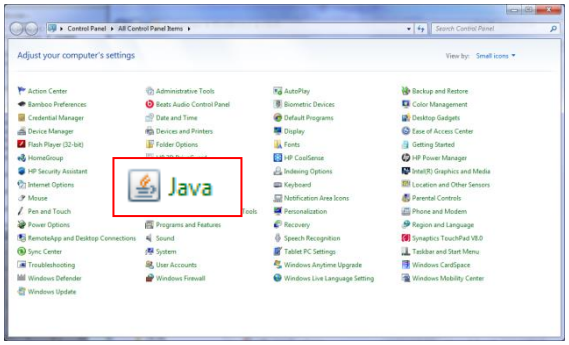
[ ] Double-click on postages stamps



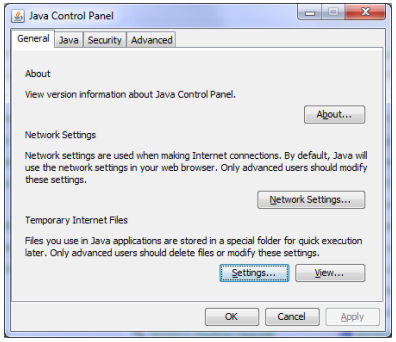
Universal Fix for CCC Confer:

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

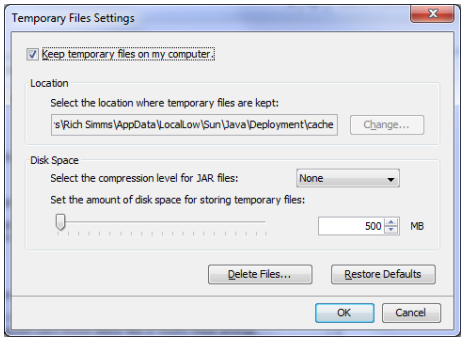
Control Panel (small icons)



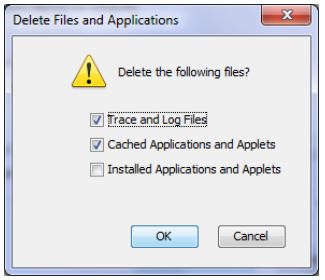
General Tab > Settings…



500MB cache size



Delete these



Google Java download

Quiz

No Quiz Today !

More Shell Scripting

Objectives	Agenda
• Use conditionals in scripts • Transfer files between computers • Archive directories using tar	• No Quiz • Questions from last week • Getting started (if you haven't already) • Scripting tips • scp • Tarballs • Wrap up

✵ = hands on exercise for topic

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.*

Housekeeping

Next Class

Project is due next week!

1. No labs due today

2. There is a check script for Lab X2

3. One week from now (May 30th)
   - Project due on by 11:59PM.
   - If you haven't started yet, now would be a good time!

4. Two weeks from now (June 6th)
   - Final Exam (Test #3) 1-3:50PM
   - Extra credit labs are due by 11:59PM .

Make backup copies of your script

change, change, change, change, … rest

```
/home/cis90/simben/bin $ cp myscript myscript.v1
```

change, change, change, change, … rest

```
/home/cis90/simben/bin $ cp myscript myscript.v2
```

change, change, change, change, … rest

```
/home/cis90/simben/bin $ cp myscript myscript.v3
```

Managing your grade

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

Points gone by
- 10 quizzes - 30 points
- 2 tests - 60 points
- 3 forum periods - 60 points
- 10 labs - 200 points

450 points

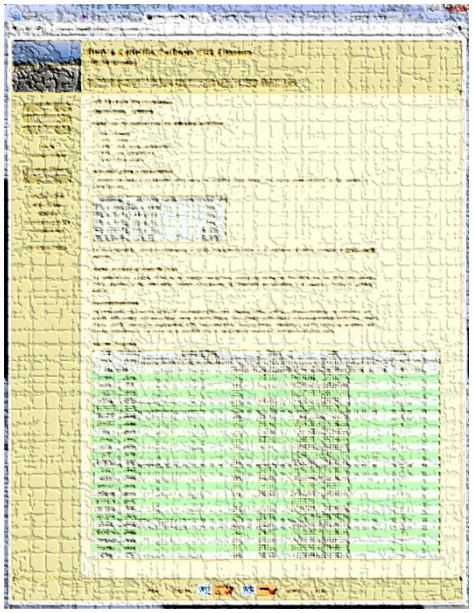
Points yet to earn
- 1 test - 30 points
- 1 forum periods - 20 points
- 1 final project - 60 points

110 points

- Plus extra credit - up to 90 points

Managing your grade

Use the web page



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

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

Use Jesse's checkgrades script

```
adaldrida: 85% (383 of 450 points)
anborn: 100% (451 of 450 points)
arador: 56% (256 of 450 points)
balrog: 0% (0 of 450 points)
bilbo: 84% (382 of 450 points)
celebrian: 76% (346 of 450 points)
cirdan: 54% (245 of 450 points)
durin: 89% (402 of 450 points)
dwalin: 99% (449 of 450 points)
elrond: 110% (498 of 450 points)
eomer: 108% (488 of 450 points)
faramir: 105% (473 of 450 points)
frodo: 98% (444 of 450 points)
gimli: 69% (314 of 450 points)
goldberry: 87% (393 of 450 points)
gwaihir: 71% (323 of 450 points)
haldir: 66% (297 of 450 points)
ingold: 91% (413 of 450 points)
ioreth: 95% (429 of 450 points)
legolas: 108% (488 of 450 points)
marhari: 91% (411 of 450 points)
quickbeam: 60% (271 of 450 points)
samwise: 94% (426 of 450 points)
sauron: 99% (446 of 450 points)
shadowfax: 76% (345 of 450 points)
strider: 104% (471 of 450 points)
theoden: 105% (473 of 450 points)
treebeard: 93% (422 of 450 points)
tulkas: 94% (426 of 450 points)
```

Thu May 23 11:41:38 PDT 2013

Final Exam

Face-to-face or proctored (cannot be taken online using CCC Confer)

It will be held in room 2501 on Thursday, June 6th from 1:00 to 3:50PM (hard stop, no extension time period)

If you know you can't make this date you will need to contact the instructor, in advance, to arrange an exam **EARLIER** in the week.

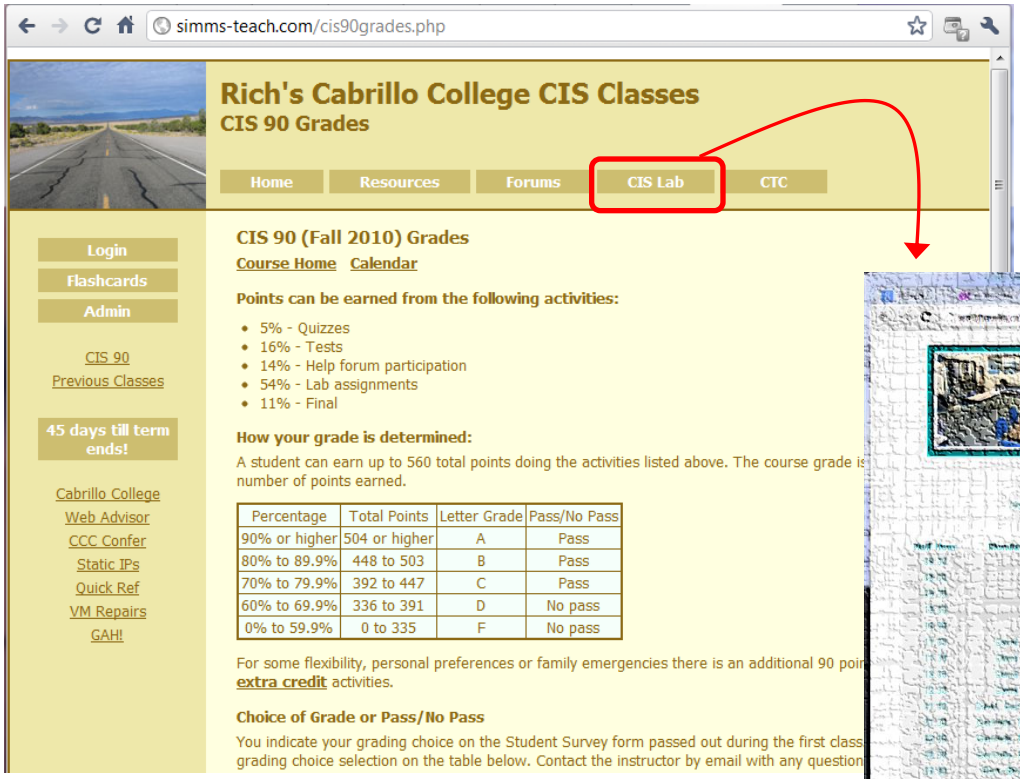
No makeups after the exam

Practice test will be available

	6/6	**Test #3 (the final exam)** **Time** • 1:00PM - 3:50PM in Room 2501 **Materials** • Presentation slides (download) • Test (download)		5 posts Lab X1 Lab X2

Managing your grade

Getting extra help for CIS 90

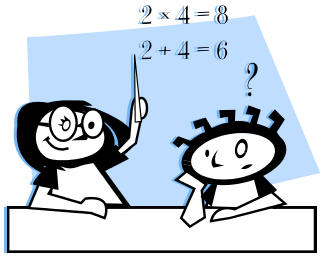


Come by the lab and get help from instructors and student assistants

Managing your grade

Getting extra help for CIS 90

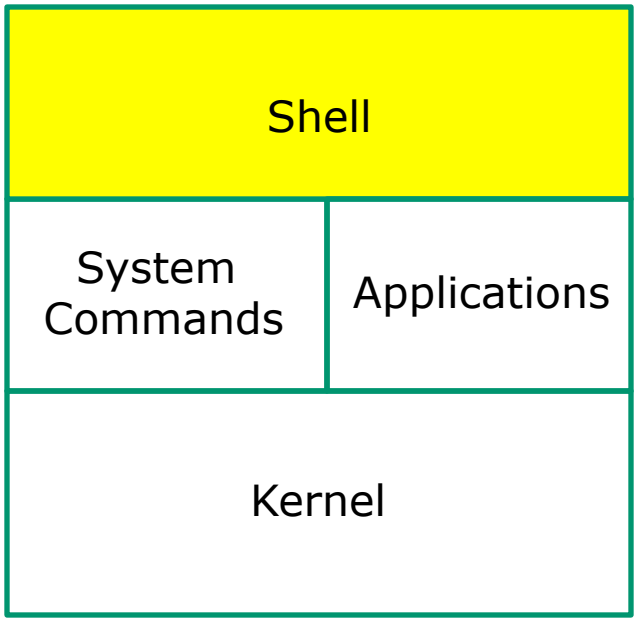
- Rich's Office Hours 4:20-5:10pm in Room 2501 (right after class) or TBA (contact me)
- Ask questions on the Forum at:
  http://opus.cabrillo.edu/forum/



Refresh

UNIX/Linux Architecture

The Shell



- Allows users to interact with the computer via a "command line".
- Prompts for a command, parses the command, finds the right program and gets that program executed.
- Called a "shell" because it hides the underlying operating system.
- Many shell programs are available: sh (Bourne shell), bash (born again shell), csh (C shell), ksh (Korn shell).
- **A user interface and a programming language (scripts).**
- GNOME and KDE desktops could be called graphical shells

Shell Scripts

Some scripts on opus

1) /home/cis90/bin/riddle1
2) /home/cis90/bin/allscripts
3) /etc/rc.d/init.d/network
4) /usr/bin/spell
5) /usr/bin/vimtutor
6) ~/bin/enlightenment

You have read permission for all these scripts. You can use cat, more, less, or even vi to view them

Many commands are scripts

Which commands in /bin are really scripts?

```
file /bin/* | grep script
```

How many commands in /bin are scripts?

```
file /bin/* | grep script | wc -l
```

Class Activity
Scripting

Of all the UNIX/Linux commands in:

/bin

/usr/bin

/sbin

/usr/sbin

How many are scripts?

Write your answer in the chat window

Project

Getting started on the final project
(If you haven't done this already)

1. Create a file in your bin directory named myscript:
   - Copy from /home/cis90/depot/myscript
   - or copy and paste template code from:
     http://simms-teach.com/docs/cis90/cis90final-project.pdf

2. Give yourself full permissions and give CIS 90 group read and execute permissions
   - **chmod 750 myscript**

3. Run **allscripts** and verify your script will run without any errors

Grading rubric (60 points maximum)

Possible Points	Requirements
30	Implementing all five tasks (6 points each): • Requirements for each task: – Minimum of 10 "original" script command lines – Has one or more non-generic comments to explain what it is doing – Has user interaction
25	You don't have to do all of these but do at least five: • Redirecting stdin (5 points) • Redirecting stdout (5 points) • Redirecting stderr (5 points) • Use of permissions (5 points) • Use of filename expansion characters (5 points) • Use of absolute path (5 points) • Use of relative path (5 points) • Use of a PID (5 points) • Use of inodes (5 points) • Use of links (5 points) • Use of scheduling (5 points) • Use of a GID or group (5 points) • Use of a UID or user (5 points) • Use of a /dev/tty device (5 points) • Use of a signal (5 points) • Use of piping (5 points) • Use of an environment variable (5 points) • Use of /bin/mail (5 points) • Use of a conditional (5 points) The maximum for this section is 25 points.
5	Present your script to the class
Points lost	
-15	Fails to run from **allscripts**
-15	Other students in the class are unable to read and execute your script.
-15	Error messages are displayed when running one or more tasks
-up to 90	No credit for any task which contains unoriginal script code that: • Doesn't give full credit to the original author • Doesn't indicate where the code was obtained from • Doesn't include licensing terms • Violates copyright or licensing terms
Extra credit	
30	Up to three additional tasks (10 points each)

This applies to each individual task

This applies to the project as a whole

rsimms@oslab:~

```
[rsimms@oslab ~]$ date
Wed May 22 19:03:48 PDT 2013
[rsimms@oslab ~]$ ls -l /home/cis90/*/bin/myscript
-rwxr-x---. 1 berric90 cis90   726 May  9 14:53 /home/cis90/berric/bin/myscript
-rw-rw-r--. 1 braril90 cis90     0 May 16 15:26 /home/cis90/braril/bin/myscript
-rwx--x--x. 1 bunsol90 cis90    39 May 17 02:01 /home/cis90/bunsol/bin/myscript
-rwxr-x---. 1 cruben90 cis90   931 May  9 15:12 /home/cis90/cruben/bin/myscript
-rwxr-x---. 1 davmic90 cis90   723 May 17 09:58 /home/cis90/davmic/bin/myscript
-rwxrwxr-x. 1 deddil90 cis90   720 May  9 14:24 /home/cis90/deddil/bin/myscript
-rwxr-x---. 1 diapam90 cis90  2752 May 22 11:17 /home/cis90/diapam/bin/myscript
-rwxr-x---. 1 dusaar90 cis90   706 May  9 14:26 /home/cis90/dusaar/bin/myscript
-rwxr-x---. 1 fareli90 cis90  2883 May 21 08:07 /home/cis90/fareli/bin/myscript
-rwxr-x---. 1 gilgab90 cis90  6979 May 17 01:56 /home/cis90/gilgab/bin/myscript
-rwxr-xr-x. 1 goljor90 cis90   546 May  9 14:06 /home/cis90/goljor/bin/myscript
-rwxr-x---. 1 joylia90 cis90   721 May 14 22:17 /home/cis90/joylia/bin/myscript
-rwxr-x---. 1 lejmic90 cis90   968 May 20 14:31 /home/cis90/lejmic/bin/myscript
-rwxr-x---. 1 lemrya90 cis90   767 May 16 12:35 /home/cis90/lemrya/bin/myscript
-rwxr-x---. 1 lovben90 cis90   546 May 16 21:09 /home/cis90/lovben/bin/myscript
-rwxr-x---. 1 marand90 cis90   849 May 19 14:47 /home/cis90/marand/bin/myscript
-rwxrwxr-x. 1 mazari90 cis90   719 May  9 14:23 /home/cis90/mazari/bin/myscript
-rwxr-x---. 1 mennat90 cis90  1864 May 22 11:18 /home/cis90/mennat/bin/myscript
-rwxr-x---. 1 milhom90 cis90  1526 May  9 10:19 /home/cis90/milhom/bin/myscript
-rwxr-x---. 1 paljay90 cis90   764 May 14 23:59 /home/cis90/paljay/bin/myscript
-rwxr-x--x. 1 perste90 cis90   923 May 16 17:12 /home/cis90/perste/bin/myscript
-rwxr-x---. 1 rodduk90 cis90   546 May 16 08:51 /home/cis90/rodduk/bin/myscript
-rwxr-x---. 1 rutsam90 cis90   692 May  9 14:39 /home/cis90/rutsam/bin/myscript
-rwxr-x---. 1 schrya90 cis90  1431 May 22 11:11 /home/cis90/schrya/bin/myscript
-rwxr-x---. 1 shepau90 cis90   717 May  9 14:23 /home/cis90/shepau/bin/myscript
-rwxr-x---. 1 simben90 cis90 10512 May  9 10:21 /home/cis90/simben/bin/myscript
-rwxrwxr-x. 1 valjus90 cis90   546 May  9 14:34 /home/cis90/valjus/bin/myscript
-rwxr-x---. 1 vashil90 cis90   709 May 22 15:49 /home/cis90/vashil/bin/myscript
-rwxr-x---. 1 wiltyr90 cis90  1169 May 16 16:42 /home/cis90/wiltyr/bin/myscript
-rwxr-xr-x. 1 wismar90 cis90  1695 May 21 20:34 /home/cis90/wismar/bin/myscript
[rsimms@oslab ~]$
```

Which scripts can be hacked by other classmates?

rsimms@oslab:~

```
[rsimms@oslab ~]$ date
Wed May 22 19:03:48 PDT 2013
[rsimms@oslab ~]$ ls -l /home/cis90/*/bin/myscript
-rwxr-x---. 1 berric90 cis90   726 May  9 14:53 /home/cis90/berric/bin/myscript
-rw-rw-r--. 1 braril90 cis90     0 May 16 15:26 /home/cis90/braril/bin/myscript
-rwx--x--x. 1 bunsol90 cis90    39 May 17 02:01 /home/cis90/bunsol/bin/myscript
-rwxr-x---. 1 cruben90 cis90   931 May  9 15:12 /home/cis90/cruben/bin/myscript
-rwxr-x---. 1 davmic90 cis90   723 May 17 09:58 /home/cis90/davmic/bin/myscript
-rwxrwxr-x. 1 deddil90 cis90   720 May  9 14:24 /home/cis90/deddil/bin/myscript
-rwxr-x---. 1 diapam90 cis90  2752 May 22 11:17 /home/cis90/diapam/bin/myscript
-rwxr-x---. 1 dusaar90 cis90   706 May  9 14:26 /home/cis90/dusaar/bin/myscript
-rwxr-x---. 1 fareli90 cis90  2883 May 21 08:07 /home/cis90/fareli/bin/myscript
-rwxr-x---. 1 gilgab90 cis90  6979 May 17 01:56 /home/cis90/gilgab/bin/myscript
-rwxr-xr-x. 1 goljor90 cis90   546 May  9 14:06 /home/cis90/goljor/bin/myscript
-rwxr-x---. 1 joylia90 cis90   721 May 14 22:17 /home/cis90/joylia/bin/myscript
-rwxr-x---. 1 lejmic90 cis90   968 May 20 14:31 /home/cis90/lejmic/bin/myscript
-rwxr-x---. 1 lemrya90 cis90   767 May 16 12:35 /home/cis90/lemrya/bin/myscript
-rwxr-x---. 1 lovben90 cis90   546 May 16 21:09 /home/cis90/lovben/bin/myscript
-rwxr-x---. 1 marand90 cis90   849 May 19 14:47 /home/cis90/marand/bin/myscript
-rwxrwxr-x. 1 mazari90 cis90   719 May  9 14:23 /home/cis90/mazari/bin/myscript
-rwxr-x---. 1 mennat90 cis90  1864 May 22 11:18 /home/cis90/mennat/bin/myscript
-rwxr-x---. 1 milhom90 cis90  1526 May  9 10:19 /home/cis90/milhom/bin/myscript
-rwxr-x---. 1 paljay90 cis90   764 May 14 23:59 /home/cis90/paljay/bin/myscript
-rwxr-x--x. 1 perste90 cis90   923 May 16 17:12 /home/cis90/perste/bin/myscript
-rwxr-x---. 1 rodduk90 cis90   546 May 16 08:51 /home/cis90/rodduk/bin/myscript
-rwxr-x---. 1 rutsam90 cis90   692 May  9 14:39 /home/cis90/rutsam/bin/myscript
-rwxr-x---. 1 schrya90 cis90  1431 May 22 11:11 /home/cis90/schrya/bin/myscript
-rwxr-x---. 1 shepau90 cis90   717 May  9 14:23 /home/cis90/shepau/bin/myscript
-rwxr-x---. 1 simben90 cis90 10512 May  9 10:21 /home/cis90/simben/bin/myscript
-rwxrwxr-x. 1 valjus90 cis90   546 May  9 14:34 /home/cis90/valjus/bin/myscript
-rwxr-x---. 1 vashil90 cis90   709 May 22 15:49 /home/cis90/vashil/bin/myscript
-rwxr-x---. 1 wiltyr90 cis90  1169 May 16 16:42 /home/cis90/wiltyr/bin/myscript
-rwxr-xr-x. 1 wismar90 cis90  1695 May 21 20:34 /home/cis90/wismar/bin/myscript
[rsimms@oslab ~]$
```

Which scripts would lose 15 points because they cannot be run by other classmates?

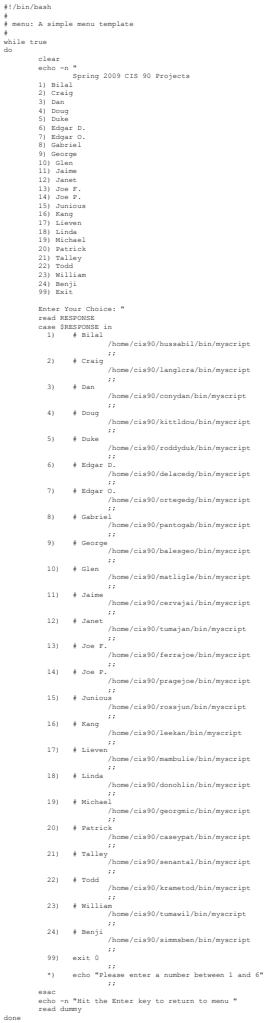
Don't forget to do this!

chmod 750 ~/bin/myscript

Points lost	
-15	Fails to run from **allscripts**
-15	Other students in the class are unable to read and execute your script.
-15	Error messages are displayed when running one or more tasks
-up to 90	No credit for any task which contains unoriginal script code that: • Doesn't give full credit to the original author • Doesn't indicate where the code was obtained from • Doesn't include licensing terms • Violates copyright or licensing terms

Final Project

What is allscripts and myscript?



```
#!/bin/bash
#
# menu: A simple menu template
#
while true
do
        clear
        echo -n "
                Spring 2009 CIS 90 Projects
        1) Bilal
        2) Craig
        3) Dan
        4) Doug
        5) Duke
        6) Edgar D.
        7) Edgar O.
        8) Gabriel
        9) George
        10) Glen
        11) Jaime
        12) Janet
        13) Joe F.
        14) Joe P.
        15) Junious
        16) Kang
        17) Lieven
        18) Linda
        19) Michael
        20) Patrick
        21) Talley
        22) Todd
        23) William
        24) Benji
        99) Exit

        Enter Your Choice: "
        read RESPONSE
        case $RESPONSE in
          1)    # Bilal
                        /home/cis90/hussabil/bin/myscript
                        ;;
          2)    # Craig
                        /home/cis90/langlcra/bin/myscript
                        ;;
          3)    # Dan
                        /home/cis90/conydan/bin/myscript
                        ;;
          4)    # Doug
                        /home/cis90/kittldou/bin/myscript
                        ;;
          5)    # Duke
                        /home/cis90/roddyduk/bin/myscript
                        ;;
          6)    # Edgar D.
                        /home/cis90/delacedg/bin/myscript
                        ;;
          7)    # Edgar O.
                        /home/cis90/ortegedg/bin/myscript
                        ;;
          8)    # Gabriel
                        /home/cis90/pantogab/bin/myscript
                        ;;
          9)    # George
                        /home/cis90/balesgeo/bin/myscript
                        ;;
          10)   # Glen
                        /home/cis90/matligle/bin/myscript
                        ;;
          11)   # Jaime
                        /home/cis90/cervajai/bin/myscript
                        ;;
          12)   # Janet
                        /home/cis90/tumajan/bin/myscript
                        ;;
          13)   # Joe F.
                        /home/cis90/ferrajoe/bin/myscript
                        ;;
          14)   # Joe P.
                        /home/cis90/pragejoe/bin/myscript
                        ;;
          15)   # Junious
                        /home/cis90/rosajun/bin/myscript
                        ;;
          16)   # Kang
                        /home/cis90/leekan/bin/myscript
                        ;;
          17)   # Lieven
                        /home/cis90/mambulie/bin/myscript
                        ;;
          18)   # Linda
                        /home/cis90/donohlin/bin/myscript
                        ;;
          19)   # Michael
                        /home/cis90/georgmic/bin/myscript
                        ;;
          20)   # Patrick
                        /home/cis90/caseypat/bin/myscript
                        ;;
          21)   # Talley
                        /home/cis90/senantal/bin/myscript
                        ;;
          22)   # Todd
                        /home/cis90/krametod/bin/myscript
                        ;;
          23)   # William
                        /home/cis90/tumawil/bin/myscript
                        ;;
          24)   # Benji
                        /home/cis90/simmaben/bin/myscript
                        ;;
          99)   exit 0
                        ;;
          *)    echo "Please enter a number between 1 and 6"
                        ;;
        esac
        echo -n "Hit the Enter key to return to menu "
        read dummy
done
```

```
#
# menu: A simple menu template
#
while true
do
clear
echo -n "
CIS 90 Final Project
1) Task 1
2) Task 2
3) Task 3
4) Task 4
5) Task 5
6) Exit
Enter Your Choice: "
read RESPONSE
case $RESPONSE in
1) # Commands for Task 1
;;
2) # Commands for Task 2
;;
3) # Commands for Task 3
;;
4) # Commands for Task 4
;;
5) # Commands for Task 5
;;
6) exit 0
;;
*) echo "Please enter a number between 1 and 6"
;;
esac
echo -n "Hit the Enter key to return to menu "
read dummy
done
```

allscripts

```
#!/bin/bash
#
# menu: A simple menu template
#
while true
do
    clear
    echo -n "
        Spring 2009 cis 90 Projects
1) Bilal
2) Craig
3) Dan
4) Doug
5) Duke
6) Edgar D.
7) Edgar O.
8) Gabriel
9) George
10) Glen

40) Songul

12) Janet
13) Joe F.
14) Joe P.
15) Junius
16) Kang
17) Lieven
18) Linda
19) Michael
20) Patrick
21) Talley
22) Todd
23) William
24) Wenli
99) Exit

Enter Your Choice: "
    read RESPONSE
    case $RESPONSE in
        1)    # Bilal
                /home/cis90/husaabil/bin/myscript
                ''
        2)    # Craig
                /home/cis90/langlcra/bin/myscript
                ''
        3)    # Dan
                /home/cis90/cosydan/bin/myscript
                ''
        4)    # Doug
                /home/cis90/kittidou/bin/myscript
                ''
        5)    # Duke
                /home/cis90/roddyduk/bin/myscript
                ''
        6)    # Edgar D.
                /home/cis90/delacedj/bin/myscript
                ''
        7)    # Edgar O.
                /home/cis90/ortegedj/bin/myscript
                ''
        8)    # Gabriel
                /home/cis90/pantogab/bin/myscript
                ''
        9)    # George
                /home/cis90/balsageo/bin/myscript
                ''
        10)   # Glen
                /home/cis90/matliglm/bin/myscript
                ''
        40)     # Songul
                ''
        12)   # Janet
                /home/cis90/tumajan/bin/myscript
                ''
        13)   # Joe F.
                /home/cis90/ferrajoe/bin/myscript
                ''
        14)   # Joe P.
                /home/cis90/pragejoe/bin/myscript
                ''
        15)   # Junius
                /home/cis90/rosajun/bin/myscript
                ''
        16)   # Kang
                /home/cis90/leekan/bin/myscript
                ''
        17)   # Lieven
                /home/cis90/maebulie/bin/myscript
                ''
        18)   # Linda
                /home/cis90/donohlin/bin/myscript
                ''
        19)   # Michael
                /home/cis90/georgmic/bin/myscript
                ''
        20)   # Patrick
                /home/cis90/caseypat/bin/myscript
                ''
        21)   # Talley
                /home/cis90/sesantal/bin/myscript
                ''
        22)   # Todd
                /home/cis90/krametod/bin/myscript
                ''
        23)   # William
                /home/cis90/tumaswil/bin/myscript
                ''
        24)   # Wenli
                /home/cis90/simswhen/bin/myscript
                ''
        99)     exit 0
                ''
        *)    echo "Please enter a number between 1 and 4"
                ''
    esac
    echo -e "Hit the Enter key to return to menu "
    read dummy
done
```

The while statement in allscripts will loop through the code forever

A case statement is used to run the appropriate myscript file in the student's bin directory. This is specified using an absolute filename.

```
/home/cis90/messison/bin/myscript
```

*For case 99 the **exit** command is called which causes the script to terminate. The return code of 0 means success.*

myscript

```
#
# menu: A simple menu template
#
while true
do
      clear
      echo -n "
      CIS 90 Final Project
      1) Task 1
      2) Task 2
      3) Task 3
      4) Task 4
      5) Task 5
      6) Exit
      Enter Your Choice: "
      read RESPONSE
      case $RESPONSE in
            1) # Commands for Task 1
            ;;
            2) # Commands for Task 2
            ;;
            3) # Commands for Task 3
            ;;
            4) # Commands for Task 4
            ;;
            5) # Commands for Task 5
            ;;
            6) exit 0
            ;;
            *) echo "Please enter a number between 1 and 6"
            ;;
      esac
      echo -n "Hit the Enter key to return to menu "
      read dummy
done
```

*The outer while statement will loop forever. The only way out is the **exit** command in case 6)*

myscript

```
#
# menu: A simple menu template
#
while true
do
      clear
      echo -n "
      CIS 90 Final Project
      1) Task 1
      2) Task 2
      3) Task 3
      4) Task 4
      5) Task 5
      6) Exit
      Enter Your Choice: "
      read RESPONSE
      case $RESPONSE in
            1) # Commands for Task 1
            ;;
            2) # Commands for Task 2
            ;;
            3) # Commands for Task 3
            ;;
            4) # Commands for Task 4
            ;;
            5) # Commands for Task 5
            ;;
            6) exit 0
            ;;
            *) echo "Please enter a number between 1 and 6"
            ;;
      esac
      echo -n "Hit the Enter key to return to menu "
      read dummy
done
```

This is a single echo command that prints a menu for the user

myscript

```
#
# menu: A simple menu template
#
while true
do
      clear
      echo -n "
      CIS 90 Final Project
      1) Task 1
      2) Task 2
      3) Task 3
      4) Task 4
      5) Task 5
      6) Exit
      Enter Your Choice: "
      read RESPONSE
      case $RESPONSE in
            1) # Commands for Task 1
            ;;
            2) # Commands for Task 2
            ;;
            3) # Commands for Task 3
            ;;
            4) # Commands for Task 4
            ;;
            5) # Commands for Task 5
            ;;
            6) exit 0
            ;;
            *) echo "Please enter a number between 1 and 6"
            ;;
      esac
      echo -n "Hit the Enter key to return to menu "
      read dummy
done
```

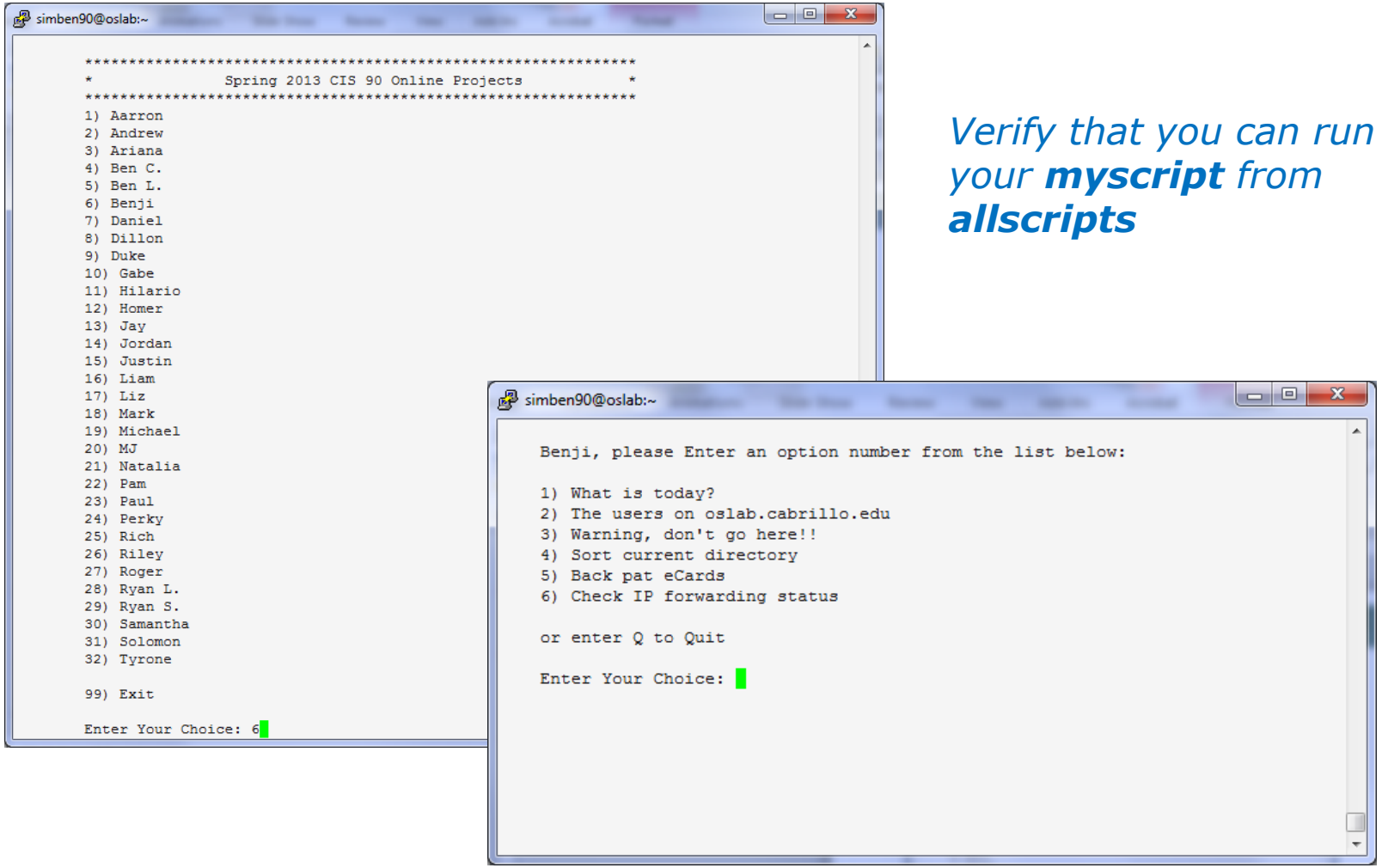
This is a case statement. One case for each task. Note the end of the case statement is case spelled backwards!

myscript

```
#
# menu: A simple menu template
#
while true
do
      clear
      echo -n "
      CIS 90 Final Project
      1) Task 1
      2) Task 2
      3) Task 3
      4) Task 4
      5) Task 5
      6) Exit
      Enter Your Choice: "
      read RESPONSE
      case $RESPONSE in
            1) # Commands for Task 1
            ;;
            2) # Commands for Task 2
            ;;
            3) # Commands for Task 3
            ;;
            4) # Commands for Task 4
            ;;
            5) # Commands for Task 5
            ;;
            6) exit 0
            ;;
            *) echo "Please enter a number between 1 and 6"
            ;;
      esac
      echo -n "Hit the Enter key to return to menu "
      read dummy
done
```

*The **read** command gets input from the user and stores it in a variable.*

*The variable to use is specified as the argument on the **read** command.*



*Verify that you can run your **myscript** from **allscripts***

Scripting Tips vi

Line Numbers in errors and vi

```
milhom90@oslab:~/bin
Are you ready to search for beauty in the poems?

That thereby beauty's rose might never die,
        That beauty still may live in thine or thee.
Herein lives wisdom, beauty, and increase;
If I could write the beauty of your eyes,
And dig deep trenches in thy beauty's field,
Then being ask'd, where all thy beauty lies,
How much more praise deserv'd thy beauty's use,
Proving his beauty by succession thine.
Upon thyself thy beauty's legacy?
        Thy unus'd beauty must be tomb'd with thee,
Beauty's effect with beauty were bereft,
Yet mortal looks adore his beauty still,
But beauty's waste hath in the world an end,
And loved your beauty with love false or true,
Ready to count them?

14
Enter a new string to search for

searching for ""
./myscript: line 40: grab: command not found
Hit the Enter key to return to menu
```

```
milhom90@oslab:~/bin
        1)      # Task 1 - grep command explored

                # Simple grep for "beauty"
                echo "Are you ready to search for beauty in the poems?"
                read dummy
                grep -h beauty /home/cis90/milhom/poems/*/*

                                                tches too

                grep -h beauty /home/cis90/milhom/poems/*/* | wc -l

                # Prompt user to supply search string and use color
                echo "Enter a new string to search for"
                read string
                echo searching for '"'$string'"'
                grab -h --color $string /home/cis90/milhom/poems/*/*
                ;;
        2)      # Commands for Task 2
                ;;
        3)      # Commands for Task 3
                ;;
        4)      # Commands for Task 4
                                                        40,17         38%
```

line 40, column 17

Use the line number in error messages to locate the error in you script

Color Syntax

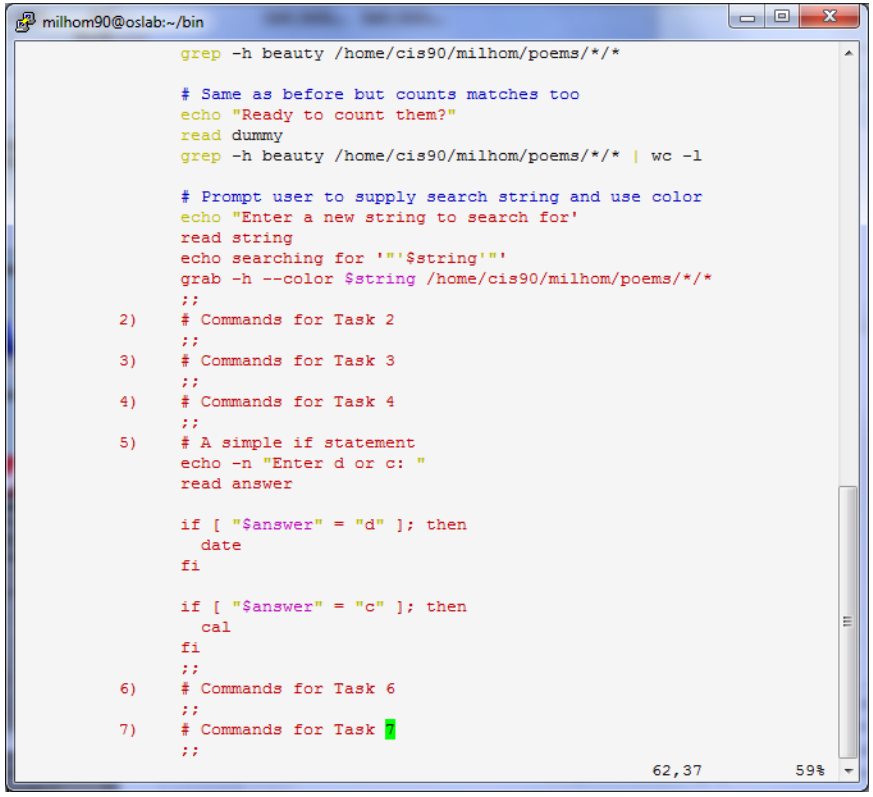
```
milhom90@oslab:~/bin
/home/cis90/milhom/bin $ ./myscript
./myscript: line 79: unexpected EOF while looking for matching `"'
./myscript: line 83: syntax error: unexpected end of file
/home/cis90/milhom/bin $
```

```
milhom90@oslab:~/bin
            grep -h beauty /home/cis90/milhom/poems/*/*

            # Same as before but counts matches too
            echo "Ready to count them?"
            read dummy
            grep -h beauty /home/cis90/milhom/poems/*/* | wc -l

            # Prompt user to supply search string and use color
            echo "Enter a new string to search for'
            read string
            echo searching for '"'$string'"'
            grab -h --color $string /home/cis90/milhom/poems/*/*
            ;;
        2)  # Commands for Task 2
            ;;
        3)  # Commands for Task 3
            ;;
        4)  # Commands for Task 4
            ;;
        5)  # A simple if statement
            echo -n "Enter d or c: "
            read answer

            if [ "$answer" = "d" ]; then
              date
            fi

            if [ "$answer" = "c" ]; then
              cal
            fi
            ;;
        6)  # Commands for Task 6
            ;;
        7)  # Commands for Task 7
            ;;
                                                    62,37         59%
```

Use color syntax to spot unmatched quotes

Is there a problem with this script? Where exactly is the problem?

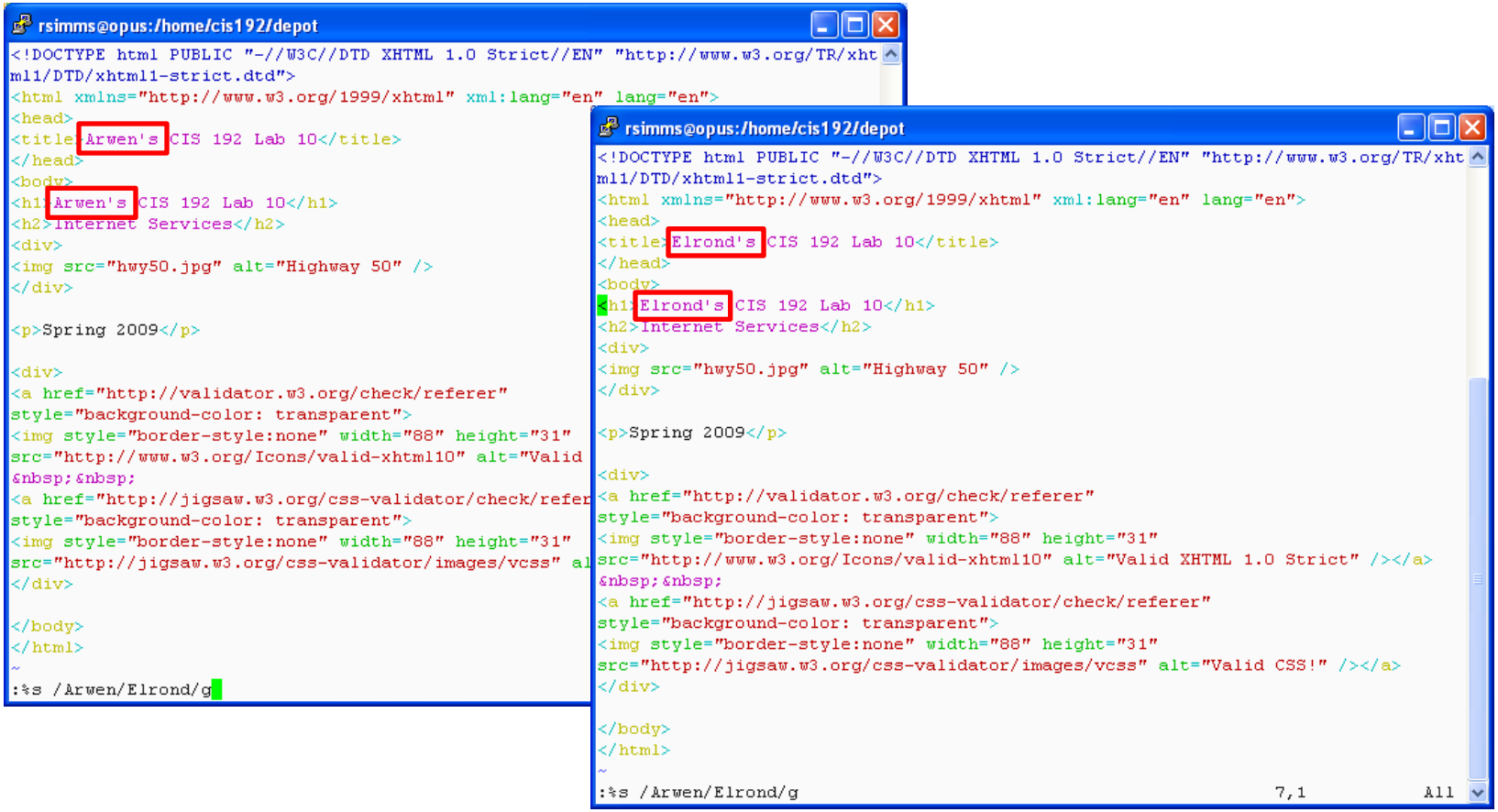
Color Syntax



One small change for script developer, one giant leap for script execution

Global search and replace with vi

esc:
%s /oldstring/newstring/g



Scripting Tips

$(cmd) and `cmd`

Shell Scripts

Sometimes you want to capture the output of a command and store in a variable or use as an argument

For example:

```
/home/cis90/simben $ find /bin | wc -l
113

/home/cis90/simben $ count=`find /bin | wc -l`

/home/cis90/simben $ echo "There are $count files in /bin"
There are 113 files in /bin
```

Using back tics around the command to evaluate

Shell Scripts

Sometimes you want to use the output of a command as an argument to another command

For example:

```
/home/cis90/simben $ find /bin | wc -l
113

/home/cis90/simben $ count=$(find /bin | wc -l)

/home/cis90/simben $ echo "There are $count files in /bin"
There are 113 files in /bin
```

Using $() instead of back tics is an alternate way to do the same thing

Class Activity
Scripting

Which of the following commands makes a banner of the current day of the week?

a) `date +"%A" | banner`

b) `banner date +"%A"`

c) `banner `date +"%A"``

d) `banner $(date +"%A")`

e) `date +"%A" | xargs banner`

Put your answer in the chat window

Scripting Tips

extracting a field from a record

/etc/passwd

```
[rsimms@opus ~]$ cat /etc/passwd
< snipped >
apache:x:48:48:Apache:/var/www:/sbin/nologin
simben90:x:1001:190:Benji Simms:/home/cis90/simben:/bin/bash
milhom90:x:1002:190:Homer Miller:/home/cis90/milhom:/bin/bash
rodduk90:x:1003:190:Duke Roddy:/home/cis90/rodduk:/bin/bash
< snipped >
```

*The ":" serves as the field **delimiter***

The 5th field of each row has the user's first and last name

myscript

```
        8)     # Commands for Task 8
               date
               ;;
```

Let's start with something simple like printing the current date and time

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        8) Examples - cut command to get name from /etc/passwd
        10) Exit

        Enter Your Choice: 8
Wed Dec  3 14:00:53 PST 2008
Hit the Enter key to return to menu
```

myscript

```
8)      # Commands for Task 8
        echo "Hello $LOGNAME"
        date
        ;;
```

Let's add a friendly Hello using the user logname

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        8) Examples - cut command to get name from /etc/passwd
        10) Exit

        Enter Your Choice: 8
Hello milhom90
Wed Dec  3 14:07:07 PST 2008
Hit the Enter key to return to menu
```

myscript

```
8)      # Commands for Task 8
        echo "Hello $LOGNAME"
        echo $(cat /etc/passwd | grep $LOGNAME)
        date
        ;;
```

Now include the /etc/passwd info as well

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        8) Examples - cut command to get name from /etc/passwd
        10) Exit

        Enter Your Choice: 8
Hello milhom90
milhom90:x:1156:103:Homer Miller:/home/cis90/milhom:/bin/bash
Wed Dec  3 14:07:07 PST 2008
Hit the Enter key to return to menu
```

myscript

```
8)     # Commands for Task 8
       echo "Hello $LOGNAME"
       echo $(cat /etc/passwd | grep $LOGNAME | cut -f5 -d":" )
       date
       ;;
```

*Cut the 5th field from the /etc/passwd record. The **-d** option specifies the delimiter to use.*

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        8) Examples - cut command to get name from /etc/passwd
        10) Exit

        Enter Your Choice: 8
Hello milhom90
Homer Miller
Wed Dec  3 14:07:07 PST 2008
Hit the Enter key to return to menu
```

myscript

```
8)      # Commands for Task 8
        echo "Hello $LOGNAME"
        NAME=$(cat /etc/passwd | grep $LOGNAME | cut -f5 -d":" )
        echo "Hello $NAME"
        date
        ;;
```

Same as before, but save the user's name in a variable and then use it

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        8) Examples - cut command to get name from /etc/passwd
        10) Exit

        Enter Your Choice: 8
Hello milhom90
Hello Homer Miller
Wed Dec  3 14:07:07 PST 2008
Hit the Enter key to return to menu
```

myscript

```
8)      # Commands for Task 8
        echo "Hello $LOGNAME"
        NAME=$(cat /etc/passwd | grep $LOGNAME | cut -f5 -d":" )
        echo "Hello $NAME"
        date
        ;;
```

Get rid of the old Hello $LOGNAME since we have something better now

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        8) Examples - cut command to get name from /etc/passwd
        10) Exit

        Enter Your Choice: 8
```

Hello Homer Miller

```
Wed Dec  3 14:07:07 PST 2008
Hit the Enter key to return to menu
```

myscript

```
8)      # Commands for Task 8
        NAME=$(cat /etc/passwd | grep $LOGNAME | cut -f5 -d":" | cut -f1 -d" ")
        echo "Hello $NAME"
        date
        ;;
```

We can also cut out just the first name using a blank as the delimiter

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Homer's friend made this one - Thank You
        5) Task 5
        6) Exit

        Enter Your Choice: 8
Hello Homer
Wed Dec  3 14:07:07 PST 2008
Hit the Enter key to return to menu
```

Class Exercise

Make a short script named example401 that emails a banner of your full name to yourself:

Make a new script in your bin directory
cd bin
vi example401

In vi add these lines to your example401 script then save:

```
name=$(cat /etc/passwd | grep $LOGNAME | cut -f5 -d":" )
banner $(echo $name) | mail -s "$name" $LOGNAME
```

Prepare and run your script
chmod +x example401
example401

Read your mail to view your new message
mail

Scripting Tips

simple if statement

myscript

If statements are used to test if a condition is true and if so execute a specific set of commands

```
5)      # Simple if statement
        echo -n "Enter d or c: "
        read answer

        if [ "$answer" = "d" ]; then
           date
        fi

        if [ "$answer" = "c" ]; then
           cal
        fi

        ;;
```

*The **date** command is executed only if the user typed a "d"*

*The **cal** command is executed only if the user typed a "c"*

*An **if** statement is ended with **fi** (if spelled backward)*

myscript

```
          Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - logic
        10) Exit

        Enter Your Choice: 5
Enter d or c: d
Sun May 17 10:00:35 PDT 2009
Hit the Enter key to return to menu
```

```
if [ "$answer" = "d" ]; then
   date
fi
```

*The **date** command runs because $answer = d*

myscript

```
            Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - logic
        10) Exit

        Enter Your Choice: 5
Enter d or c: c
      May 2009
Su Mo Tu We Th Fr Sa
                1  2
 3  4  5  6  7  8  9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31
Hit the Enter key to return to menu
```

```
if [ "$answer" = "c" ]; then
   cal
fi
```

*The **cal** command runs because $answer = c*

Class Exercise

Run the previous example task

- run **allscripts**
- select **12**) Homer
- select Task **5** and enter **d** (for date)
- select Task **5** and enter **c** (for calendar)

Now look at Homer's code to see how it was done:

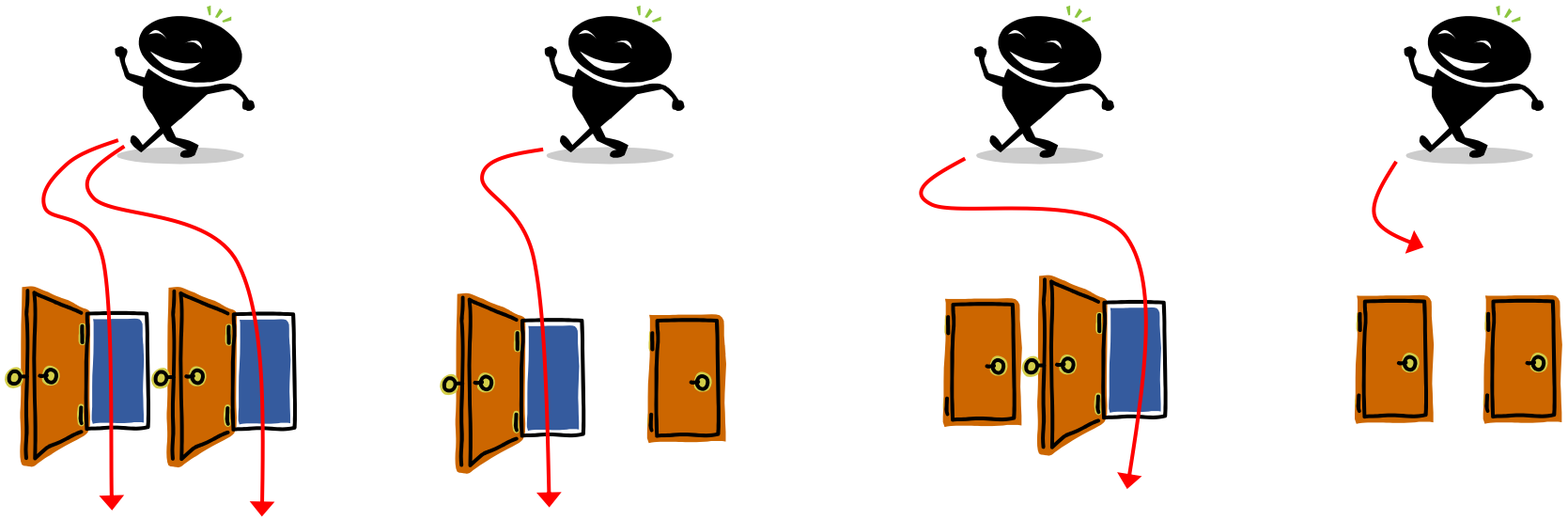
- **vi /home/cis90/milhom/bin/myscript**

Scripting Tips

if statement with "or"

p	q	p or q
T	T	T
T	F	T
F	T	T
F	F	F

OR logic



Yes *Yes* *Yes* *No*

myscript

```
6)      # Another if statement
        echo -n "Enter d or c: "
        read answer

        if [ "$answer" = "d" ] || [ "$answer" = "D" ]; then
              date
        fi

        if [ "$answer" = "c" ] || [ "$answer" = "C" ]; then
              cal
        fi

        ;;
```

*Run **date** if the user types d or D*

*Run **cal** if the user types c or C*

*The **||** is the logical "or" operator*

myscript

```
          Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        10) Exit

        Enter Your Choice: 6
Enter d or c: d
Wed May 20 05:07:10 PDT 2009
Hit the Enter key to return to menu
```

date is run because user typed a d

```
if [ "$answer" = "d" ] || [ "$answer" =  "D" ]
then
      date
fi
```

myscript

```
            Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        10) Exit

        Enter Your Choice: 6
 Enter d or c: D
Wed May 20 05:07:38 PDT 2009
 Hit the Enter key to return to menu
```

```
if [ "$answer" = "d" ] || [ "$answer" = "D" ]
then
      date
fi
```

date *is run because user typed a D*

Class Exercise

Make a new script in your bin directory
cd bin
vi example654

In vi add these lines to your script then save:

```
echo -n "What is your name: "
read answer
if [ "$answer" = "Sylar" ] || [ "$answer" = "sylar" ]; then
    echo "I'm out of here"
fi
```

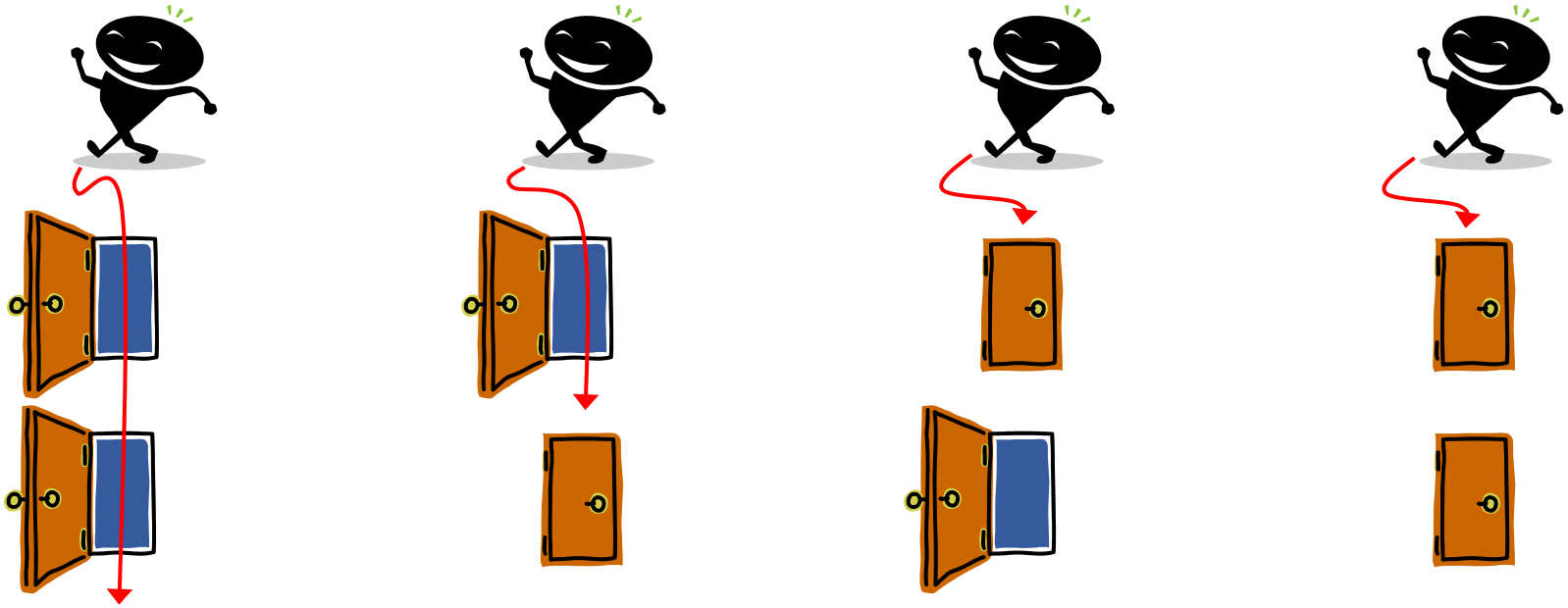
Prepare and run your script
chmod +x example654
example654

Scripting Tips

if statements with "and"

p	q	p and q
T	T	T
T	F	F
F	T	F
F	F	F

AND logic



myscript

```
7)      # logic example
        echo -n "Is the furnace "on" or off? "
        read furnace
        echo -n "Is there a fire in the fireplace (yes or no)? "
        read fireplace

        if [ "$furnace" = "on" ] && [ "$fireplace" = "yes" ]; then
                echo "It is really hot in here"
        fi

        if [ "$furnace" = "off" ] && [ "$fireplace" = "yes" ]; then
                echo "It is warm and smoky in here"
        fi

        if [ "$furnace" = "on" ] && [ "$fireplace" = "no" ]; then
                echo "It is warm in here"
        fi

        if [ "$furnace" = "off" ] && [ "$fireplace" = "no" ]; then
                echo "It is really freezing in here"
        fi
        ;;
```

&& *means "and"*

myscript

```
 Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - IF with OR logic
        7) Examples - IF with AND logic
        8) Examples - cut command to get name from /etc/passwd
        10) Exit

        Enter Your Choice: 7
Is the furnace on or off? off
Is there a fire in the fireplace (yes or no)? no
It is really freezing in here
Hit the Enter key to return to menu
```

```
if [ "$furnace" = "off" ] && [ "$fireplace" = "no" ]; then
   echo "It is really freezing in here"
fi
```

myscript

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Examples - test file attributes
        5) Examples - simple if statement
        6) Examples - another if statement
        7) Examples - logic
        8) Examples - cut command to get name from /etc/passwd
        10) Exit

        Enter Your Choice: 7
Is the furnace on or off? on
Is there a fire in the fireplace (yes or no)? no
It is warm in here
Hit the Enter key to return to menu
```

```
if [ "$furnace" = "on" ] && [ "$fireplace" = "no" ]; then
   echo "It is warm in here"
fi
```

Class Exercise

Run the previous example task
- run **allscripts**
- select **12**) Homer
- select Task **7** several times with different answers

Now look at Homer's code to see how it was done:
- **vi /home/cis90/milhom/bin/myscript**

Scripting Tips

if

file types

myscript

```
4)      # More example IF statements
        echo "The files in this directory are: "
        ls -1
        echo -n "Which file are you interested in? : "
        read filename

        echo "Here are some details about $filename:"
        file $filename

        if [ -f $filename ]; then
            echo $filename is a regular file
            echo "Here is long listing of the $filename" file:
            ls -l $filename
        fi

        if [ -d $filename ]; then
            echo $filename is a directory
            echo "Here is a long listing of the $filename directory:"
            ls -ld $filename
        fi
        ;;
```

tests to see if it's a regular file

tests to see if it's a directory

myscript

```
        Homer's CIS 90 Final Project
1) Color
2) My Find Command
3) More practice
4) Examples - test file attributes
5) Examples - simple if statement
6) Examples - another if statement
7) Examples - logic
10) Exit

Enter Your Choice: 4
The files in this directory are:
1976.egg
Anon
Blake
Shakespeare
Yeats
Which file are you interested in? : 1976.egg
Here are some details about 1976.egg:
1976.egg: ASCII English text, with escape sequences
1976.egg is a regular file
Here is long listing of the 1976.egg file:
-rw-r--r-- 1 squid squid 734 Apr  8 10:01 1976.egg
Hit the Enter key to return to menu
```

myscript

```
        Homer's CIS 90 Final Project
1) Color
2) My Find Command
3) More practice
4) Examples - test file attributes
5) Examples - simple if statement
6) Examples - another if statement
7) Examples - logic
10) Exit

Enter Your Choice: 4
The files in this directory are:
1976.egg
Anon
Blake
Shakespeare
Yeats
Which file are you interested in? : Anon
Here are some details about Anon:
Anon: directory
Anon is a directory
Here is a long listing of the Anon directory:
drwxr-xr-x 2 milhom90 cis90 4096 Apr  8 10:01 Anon
Hit the Enter key to return to menu
```

Additional file attributes to test for:

`-d file` = True if the file exists and is a directory.
`-e file` = True if the file exists.
`-f file` = True if the file exists and is a regular file
`-k file` = True if the files' "sticky" bit is set.
`-L file` = True if the file exists and is a symbolic link.
`-r file` = True if the file exists and is readable.
`-s file` = True if the file exists and is not empty.
`-u file` = True if the file exists and its set-user-id bit is set.
`-w file` = True if the file exists and is writable.
`-x file` = True if the file exists and is executable.
`-O file` = True if the file exists and is owned by the effective user id.
`-G file` = True if the file exists and is owned by the effective group id.
`file1 -nt file2` = True if file1 is newer, by modification date, than file2.
`file1 -ot file2` = True if file1 is older than file2.

Source: http://www.comptechdoc.org/os/linux/programming/script/linux_pgscripttest.html

Class Exercise

Run the previous example task
- run **allscripts**
- select **12**) Homer
- select Task **4**

Now look at Homer's code to see how it was done:
- **vi /home/cis90/milhom/bin/myscript**

Scripting Tips

if then else statement

myscript

```
3)      # Commands for Task 3
        NAME=$(cat /etc/passwd | grep $LOGNAME | cut -f5 -d":" )
        echo "Hello $NAME"
        date '+%A'
        date '+%A, %B %d, %Y'
        ;;
```

```
                Homer's CIS 90 Final Project
        1) Color
        2) My Find Command
        3) More practice
        4) Homer's friend made this one - Thank You
        5) Task 5
        6) Exit

        Enter Your Choice: 3
Hello Homer Miller
Wednesday
Wednesday, December 03, 2008
Hit the Enter key to return to menu
```

How can we do just one format or the other?

myscript

```
3)      # Commands for Task 3
        NAME=$(cat /etc/passwd | grep $LOGNAME | cut -f5 -d":" )
        echo "Hello $NAME"
        echo "$NAME, Do you like short or long dates?"
        echo -n "Enter 1 for short or 2 for long: "
        read ANSWER
        if [ "$ANSWER" = 1 ]; then
                date '+%A'
        else
                date '+%A, %B %d, %Y'
        fi
        ;;
```

Prompt user for choice then use if-then-else statement

```
          Enter Your Choice: 3
Hello Homer Miller
Homer Miller, Do you like short or long dates?
Enter 1 for short or 2 for long: 1
Wednesday
Hit the Enter key to return to menu
```

```
                Enter Your Choice: 3
Hello Homer Miller
Homer Miller, Do you like short or long dates?
Enter 1 for short or 2 for long: 2
Wednesday, December 03, 2008
Hit the Enter key to return to menu
```

Scripting Tips

Using the set command

```
[rsimms@opus scripts]$ set dogs cats birds humans

[rsimms@opus scripts]$ echo $1
dogs

[rsimms@opus scripts]$ echo $2
cats

[rsimms@opus scripts]$ echo $3
birds

[rsimms@opus scripts]$ echo $4
humans

[rsimms@opus scripts]$ echo $#
4

[rsimms@opus scripts]$ echo $*
dogs cats birds humans
```

*The **set** command parses the arguments it receives.*

$1 is set to the first argument
$2 is set to the second argument and so forth.

$# is set to the total number of arguments.

```
[rsimms@opus bin]$ echo $(ls)
1975.egg app banner datecal enlightenment hi I myscript myscript.milhom90
myscript.v1 newscript old program quiet quiet.bak script treed tryme
typescript zoom

[rsimms@opus bin]$ set $(ls)

[rsimms@opus bin]$ echo $3
banner

[rsimms@opus bin]$ echo $7
I

[rsimms@opus bin]$ echo $11
1975.egg1

[rsimms@opus bin]$ echo $#
20

[rsimms@opus bin]$ echo "The fifth file in this directory is $5"
The fifth file in this directory is enlightenment
[rsimms@opus bin]$
```

A nice way to be able to reference specific files in a directory

```
[rsimms@opus scripts]$ finger $LOGNAME
Login: rsimms                           Name: Rich Simms
Directory: /home/rsimms                 Shell: /bin/bash
On since Mon May 18 14:38 (PDT) on pts/1 from 207.62.186.30
Mail last read Mon May 18 16:09 2009 (PDT)
No Plan.

[rsimms@opus scripts]$ finger $LOGNAME | head -1
Login: rsimms                           Name: Rich Simms

[rsimms@opus scripts]$ set $(finger $LOGNAME | head -1)

[rsimms@opus scripts]$ echo $1
Login:

[rsimms@opus scripts]$ echo $2
rsimms

[rsimms@opus scripts]$ echo $3
Name:

[rsimms@opus scripts]$ echo $4
Rich

[rsimms@opus scripts]$ echo $5
Simms

[rsimms@opus scripts]$ firstname=$4

[rsimms@opus bin]$ echo My first name is $firstname
My first name is Rich
```

Another way to get a user's first name

Class Exercise

Make a new script in your bin directory
cd bin
vi example777

In vi add these lines to your script then save:

```
set $(finger $LOGNAME | head -1)
firstname=$4
echo My first name is $firstname
```

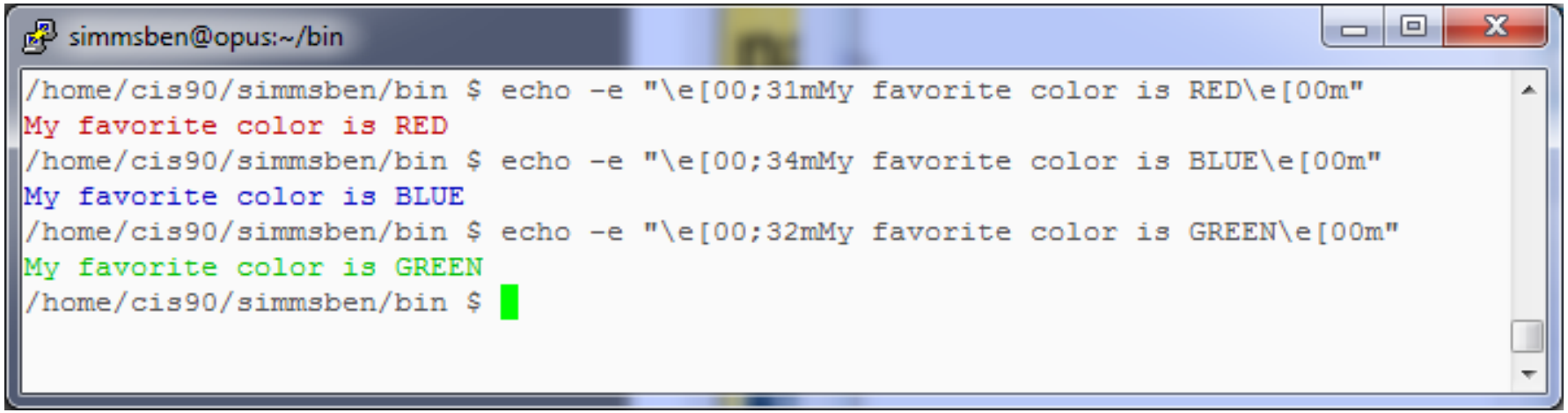
Prepare and run your script
chmod +x example777
example777

Scripting Tips

color

Using Color

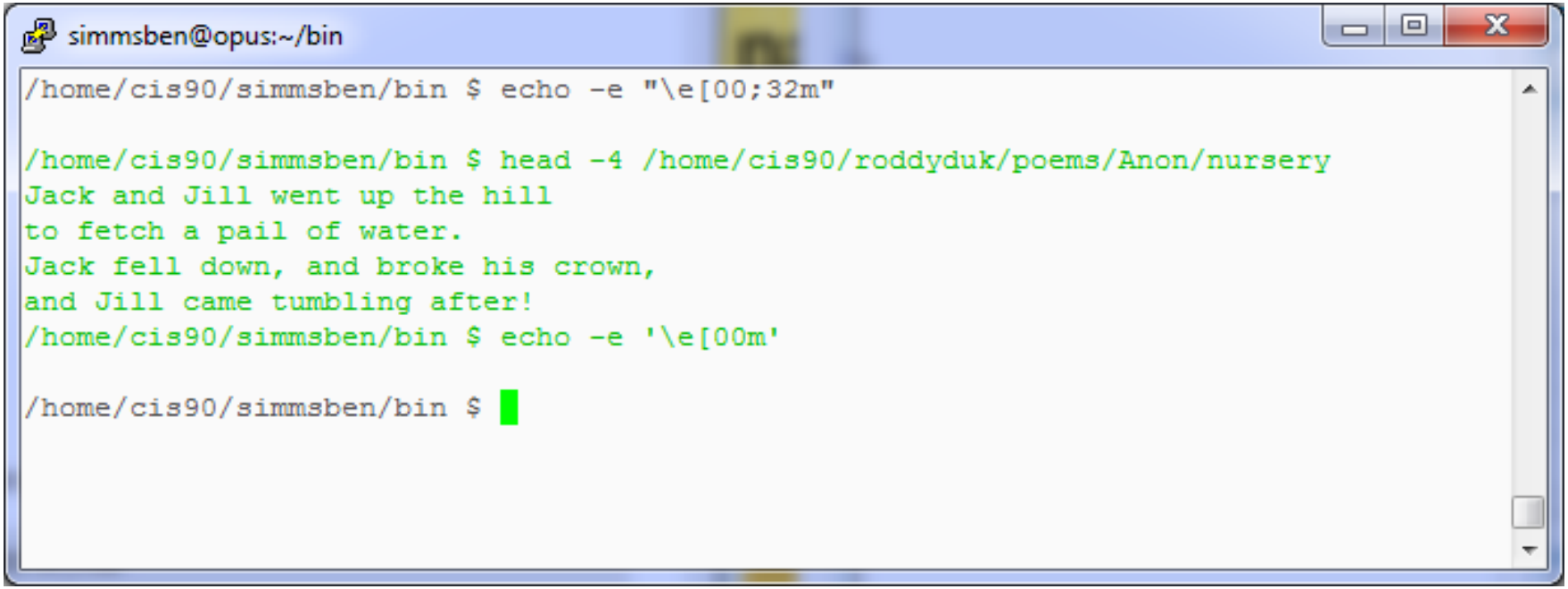
Black 0;30	Green 0;32	Red 0;31	Brown 0;33
Dark Gray 1;30	Light Green 1;32	Light Red 1;31	Yellow 1;33
Blue 0;34	Cyan 0;36	Purple 0;35	Light Gray 0;37
Light Blue 1;34	Light Cyan 1;36	Light Purple 1;35	White 1;37



*Use **echo -e "\e[0**n;nn**m"** to turn on color*
(the -e option enables interpretation of backslash escapes)

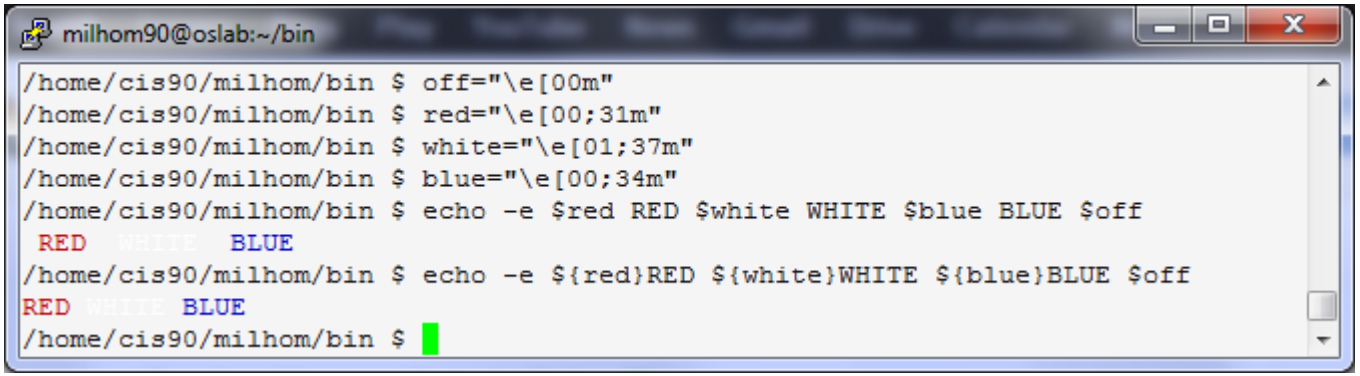
Source: http://hacktux.com/bash/colors

Using Color



*Use **echo -e '\e[00m'** to revert back to normal*

Source: http://hacktux.com/bash/colors




```
/home/cis90/milhom/bin $ off="\e[00m"
/home/cis90/milhom/bin $ red="\e[00;31m"
/home/cis90/milhom/bin $ white="\e[01;37m"
/home/cis90/milhom/bin $ blue="\e[00;34m"
/home/cis90/milhom/bin $ echo -e $red RED $white WHITE $blue BLUE $off
 RED  WHITE  BLUE
/home/cis90/milhom/bin $ echo -e ${red}RED ${white}WHITE ${blue}BLUE $off
RED WHITE BLUE
```

Demonstrating the use of variables and curly braces to make color easier to use.

Curly braces are used to clearly delineate the variable name when there is no blank used as a separator from the next string

Scripting Tips

home directories and user names

Going from CIS 90 home directory name ➔ username

```
/home/cis90/simben $ echo $HOME
/home/cis90/simben

/home/cis90/simben $ basename $HOME
simben
```

*The **basename** command extracts the filename from the end of a pathname*

```
/home/cis90/simben $ echo $(basename $HOME)
simben

/home/cis90/simben $ echo $(basename $HOME)90
simben90
```

This is how you tack 90 on to the home directory filename

```
/home/cis90/simben $ userid=`echo $(basename $HOME)90`
/home/cis90/simben $ echo The home directory of $userid is $HOME
The home directory of simben90 is /home/cis90/simben
```

Going from CIS 90 home directory name ➔ username

```
/home/cis90/simben $ finger $(basename $HOME)90
Login: simben90                         Name: Benji Simms
Directory: /home/cis90/simben           Shell: /bin/bash
On since Wed May 16 08:09 (PDT) on pts/2 from 50-0-68-
235.dsl.dynamic.fusionbroadband.com
No mail.
Plan:
To pass this course with flying colors!
```

*Determining the username from the home directory name and then using it as an argument to the **finger** command*

Going from CIS 90 username ➔ home directory name

```
/home/cis90/simben $ echo $LOGNAME
simben90
```

This variable holds your username

```
/home/cis90/simben $ echo ${LOGNAME%90}
simben
```

This is how you strip text off the end of a string

```
/home/cis90/simben $ file=`echo ${LOGNAME%90}`
/home/cis90/simben $ echo $file
simben
```

*This sets a new variable named **file** to hold the filename*

```
/home/cis90/simben $ echo The home of $LOGNAME is /home/cis90/$file
The home of simben90 is /home/cis90/simben
```

And this is how you could use it

scp

Copying your files on Opus to another Linux system

Classroom PC's, VMs and Remote Server

Opus

One RHEL5 server per class

Internet

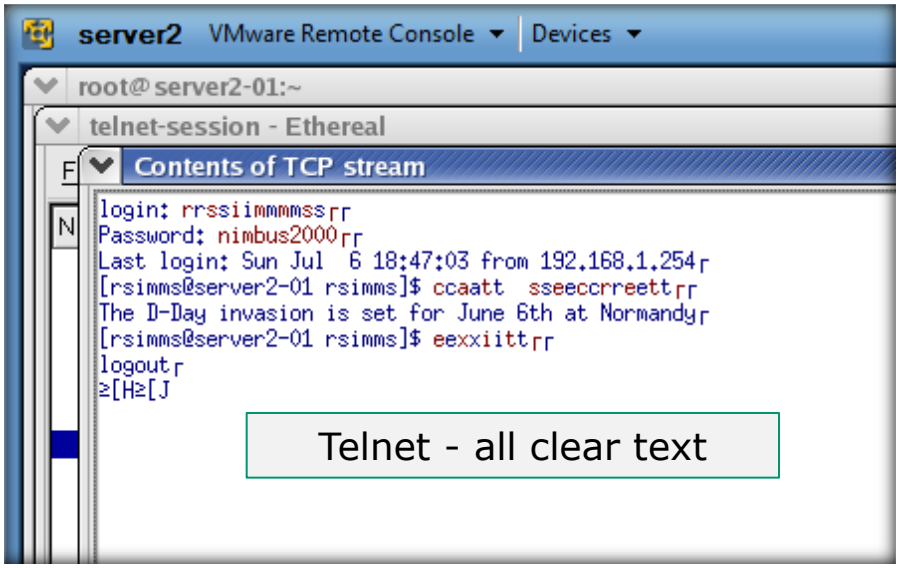
One RH9 Linux VM per laptop

One Windows laptop per student

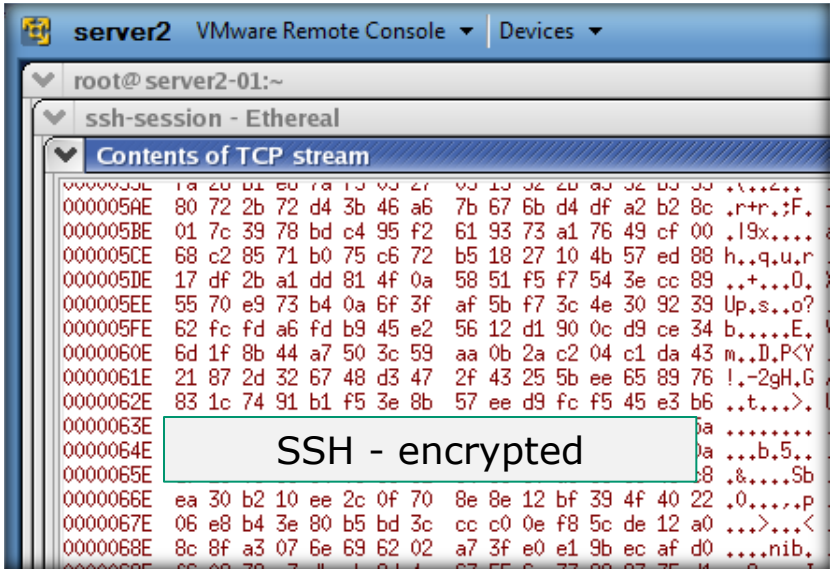
SSH is a network protocol that enables secure connections between computers

Telnet and SSH (Secure Shell)

Opus



Sniffer view of a Telnet session



Sniffer view of a SSH session

Local computer

ssh protocol

Secure Shell Protocol

- Allows secure (encrypted) connections between computers
  - **ssh** command - for login and running remote commands
  - **scp** command - for copies files between systems

scp

Copy commands **copy file(s)** to a **Destination**

- cp
  - copies files on the same system

```
cp /etc/hosts .
cp riddel1 riddle2 riddles/
cp tally tally.v1
```

*For the **cp** command each argument is a pathname*

- scp
  - copies files between systems:

```
scp milhom90@oslab.cabrillo.edu:/etc/hosts .
scp riddle1 riddle2 cis90@P1-Hugo:riddles/
scp -P 425 rsimms@frodo.simms-teach.com:tally tally.v1
```

*For the **scp** command, arguments for remote files must include username, hostname, pathname and optionally a port.*

The @ and : separators are always required with scp

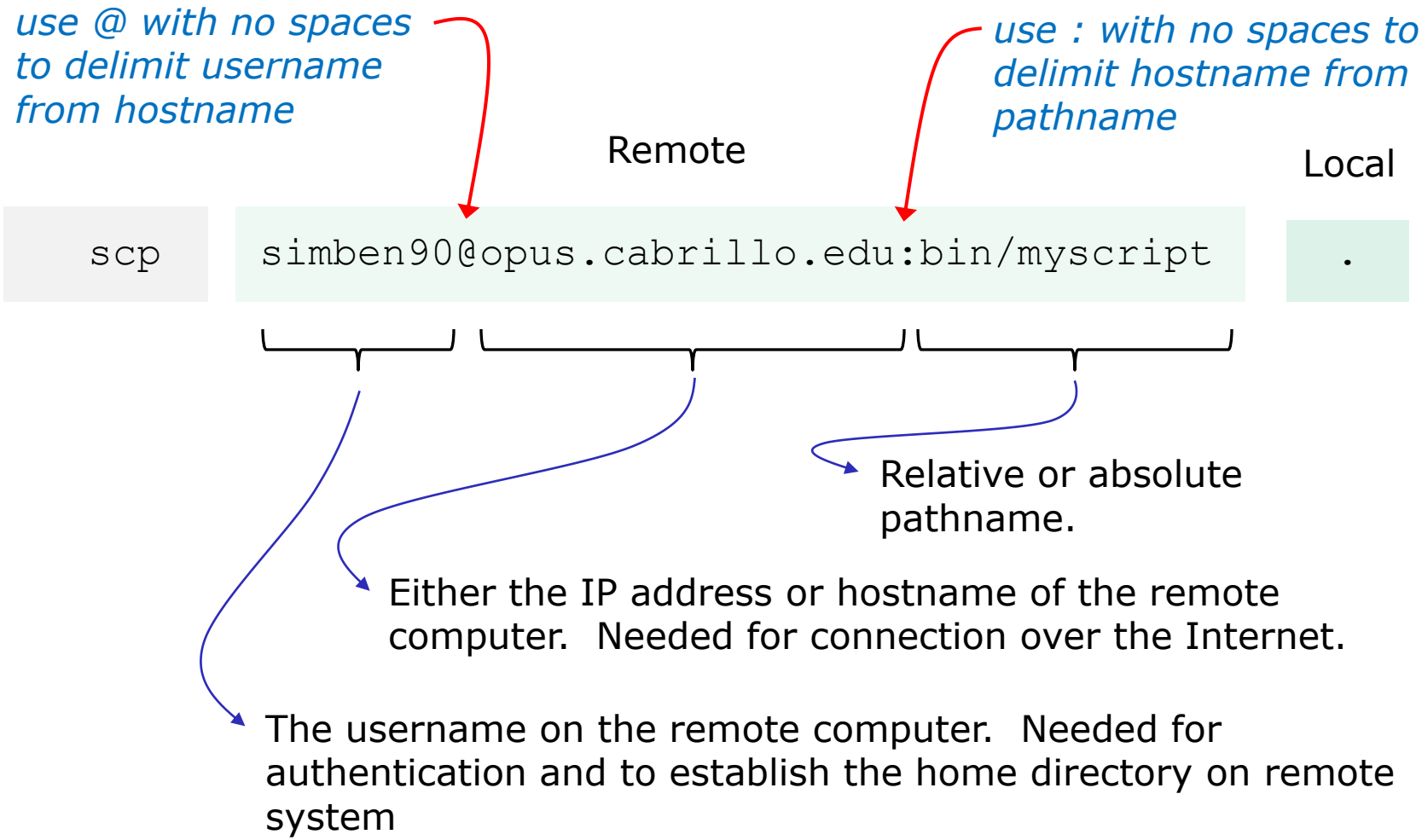
scp

	Remote	Local
`scp`	`simben90@opus.cabrillo.edu:bin/myscript`	`.`

Copy the file myscript from simben90's home bin/ directory on the remote system Opus to "here"

scp example

Copying project file on Opus to local Linux system



Copying a file from Opus to Sun-Hwa
(initiated from Sun-Hwa)

On Opus

```
/home/cis90/simben $ head -n1 ../depot/scrooge
Stave 2: The First of the Three Spirits
/home/cis90/simben $
```

On Sun-Hwa

```
[CISLAB\simben90@sun-hwa ~]$ head -n1 scrooge
head: cannot open `scrooge' for reading: No such file or directory

[CISLAB\simben90@sun-hwa ~]$ scp simben90@opus.cabrillo.edu:../depot/scrooge .
simben90@opus.cabrillo.edu's password:
scrooge                                       100%   33KB  33.1KB/s   00:00
[CISLAB\simben90@sun-hwa ~]$

[CISLAB\simben90@sun-hwa ~]$ head -n1 scrooge
Stave 2: The First of the Three Spirits
[CISLAB\simben90@sun-hwa ~]$
```

Copying multiple files from Opus to Sun-Hwa
(initiated from Sun-Hwa)

On Opus

```
/home/cis90/simben $ ls bin
app     datecal         hi  myscript     myscript.v2  simple.c  tryme
banner  enlightenment   I   myscript.v1  simple       treed     zoom
/home/cis90/simben $
```

On Sun-Hwa

```
[CISLAB\simben90@sun-hwa ~]$ ls bin
ls: cannot access bin: No such file or directory
[CISLAB\simben90@sun-hwa ~]$ mkdir bin
[CISLAB\simben90@sun-hwa ~]$ scp simben90@opus:bin/my* bin/
simben90@opus's password:
myscript                                      100%   10KB  10.2KB/s   00:00
myscript.v1                                   100%   10KB  10.2KB/s   00:00
myscript.v2                                   100%   10KB  10.2KB/s   00:00
[CISLAB\simben90@sun-hwa ~]$
```

Copying a file from Sun-Hwa to Opus
(initiated from Sun-Hwa)

On Opus

```
/home/cis90/simben $ ls file25
ls: cannot access file25: No such file or directory
```

On Sun-Hwa

```
[CISLAB\simben90@sun-hwa ~]$ echo "I love Linux" > file25
[CISLAB\simben90@sun-hwa ~]$ scp file25 simben90@opus:
The authenticity of host 'opus (172.30.5.20)' can't be established.
RSA key fingerprint is 7d:32:80:b9:52:32:c8:dc:3b:16:0e:ba:8c:fd:79:ef.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'opus,172.30.5.20' (RSA) to the list of known hosts.
simben90@opus's password:
file25                                        100%   13     0.0KB/s   00:00
[CISLAB\simben90@sun-hwa ~]$
```

```
/home/cis90/simben $ cat file25
I love Linux
```

Copying a file from Sun-Hwa to Opus
(initiated from Opus)

On Sun-Hwa

```
[CISLAB\simben90@sun-hwa ~]$ echo "I love dogs" > file15
[CISLAB\simben90@sun-hwa ~]$
```

On Opus

```
/home/cis90/simben $ cat file15
cat: file15: No such file or directory
/home/cis90/simben $

/home/cis90/simben $ scp cislab\\simben90@sun-hwa:file15 .
cislab\simben90@sun-hwa's password:
file15                                        100%   12     0.0KB/s   00:00
/home/cis90/simben $

/home/cis90/simben $ cat file15
I love dogs
/home/cis90/simben $
```

Copying a file from Sun-Hwa to Opus and renaming it
(initiated from Sun-Hwa)

On Opus

```
/home/cis90/simben $ cat iloveunix
cat: iloveunix: No such file or directory
/home/cis90/simben $
```

On Sun-Hwa

```
[CISLAB\simben90@sun-hwa ~]$ echo "I love UNIX" > file35
[CISLAB\simben90@sun-hwa ~]$ scp file35 simben90@opus:iloveunix
simben90@opus's password:
file35                                        100%   12     0.0KB/s   00:00
[CISLAB\simben90@sun-hwa ~]$
```

```
/home/cis90/simben $ cat iloveunix
I love UNIX
/home/cis90/simben $
```

Class Activity

- On Opus, locate the *ptest.template* file in the CIS 90 *depot* directory
- Log into Sun-Hwa with: **ssh cislab***username***@sun-hwa**
- On Sun-Hwa, copy the *ptest03.template* file in the Opus CIS 90 *depot* directory to your Sun-Hwa home directory renaming it *ptest03* at the same time

if [*it worked*]; **then**
  write the command you used on Sun-Hwa into the chat window
else
  write the error message you got into the chat window
fi

tar

tar command

tar *options tarfile files*

To simplify file transfers, Windows users typically "zip" multiple files together into a singe "zipfile".

Linux users use the **tar** command to do this and "archive" multiple files into a single "tarball".

tar command syntax

`tar cvf` *`tarfile pathname`*

*c = **create***
v = verbose
f = filename (which must immediately follow)

`tar` *`tvf tarfile`*

*t = table of contents (to **view** files in a archive)*
v = verbose
f = filename (which must immediately follow)

`tar` *`xvf tarfile`*

*x = **extract** files in archive*
v = verbose
f = filename (which must immediately follow)

tar command

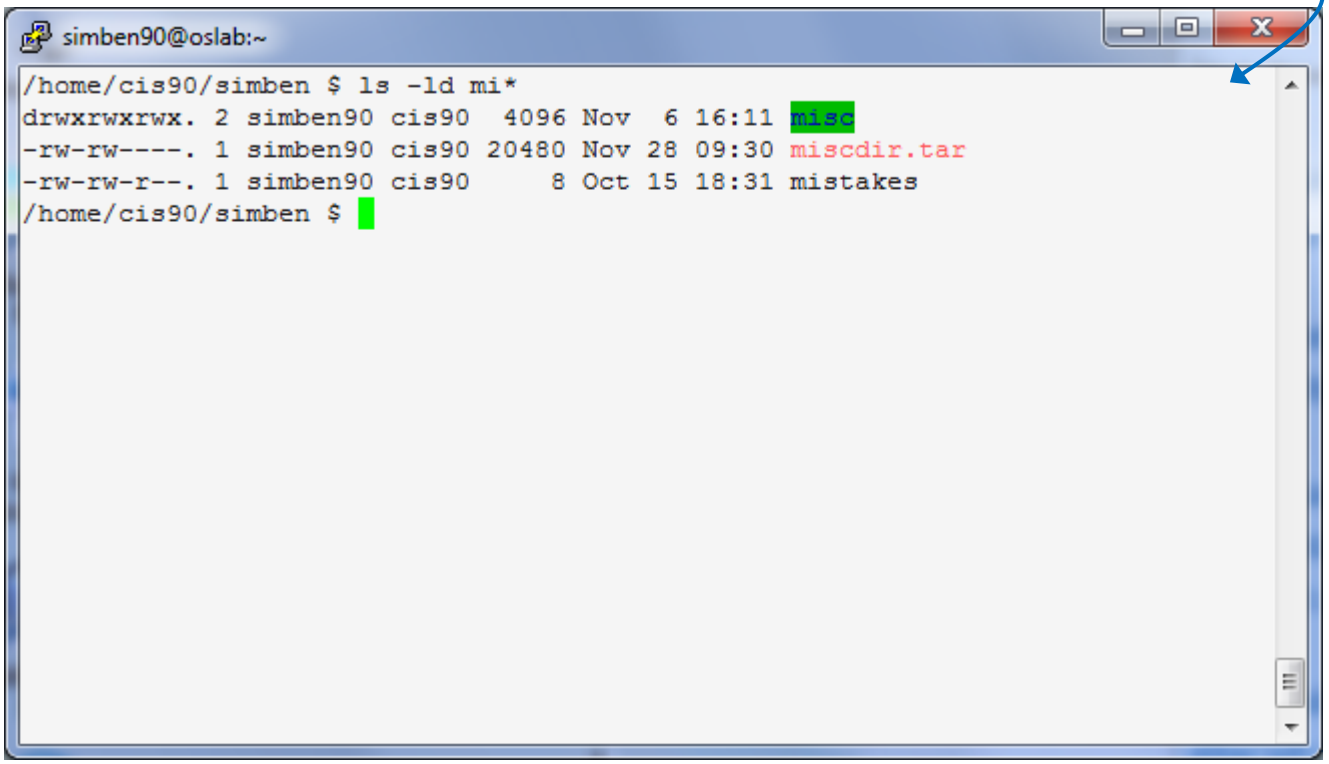
Create a tarball out of our local misc directory

```
/home/cis90/simben $ ls misc
file.dos  fruit  manpage  mystery  salad  tiurf
what_am_i
/home/cis90/simben $
```

```
/home/cis90/simben $ tar cvf miscdir.tar misc/
misc/
misc/fruit
misc/file.dos
misc/salad
misc/mystery
misc/what_am_i
misc/manpage
misc/tiurf
/home/cis90/simben $
```

tar command

Tarballs show as red in listings



tar command

View contents of a tarball

```
/home/cis90/simben $ tar tvf miscdir.tar
drwxrwxrwx simben90/cis90    0 2012-11-06 16:11 misc/
-rw-r--r-- simben90/cis90   78 2004-10-26 16:36 misc/fruit
-rw-r--r-- simben90/cis90  148 2001-07-20 22:54 misc/file.dos
-rw-r--r-- simben90/cis90   78 2004-04-17 12:13 misc/salad
lrwxrwxrwx simben90/cis90    0 2012-08-01 16:55 misc/mystery -> ../bin/enlightenment
-rw-r--r-- simben90/cis90  352 2001-07-20 15:04 misc/what_am_i
-rw-r--r-- simben90/cis90 10576 2001-07-20 20:58 misc/manpage
-rw-rw-r-- simben90/cis90    78 2012-10-15 09:25 misc/tiurf
/home/cis90/simben $
```

tar command

On another Linux system (Sun-Hwa in VLab)

```
[CISLAB\simben90@sun-hwa ~]$ ls misc
ls: cannot access misc: No such file or directory
[CISLAB\simben90@sun-hwa ~]$
```

tar command

On another Linux system (Sun-Hwa in VLab)

```
[CISLAB\simben90@sun-hwa ~]$ ls misc
ls: cannot access misc: No such file or directory


[CISLAB\simben90@sun-hwa ~]$ scp simben90@opus:miscdir.tar .
simben90@opus's password:
miscdir.tar                                   100%   20KB  20.0KB/s   00:00
[CISLAB\simben90@sun-hwa ~]$


[CISLAB\simben90@sun-hwa ~]$ tar xvf miscdir.tar
misc/
misc/fruit
misc/file.dos
misc/salad
misc/mystery
misc/what_am_i
misc/manpage
misc/tiurf
[CISLAB\simben90@sun-hwa ~]$
```

Copy tarball from Opus

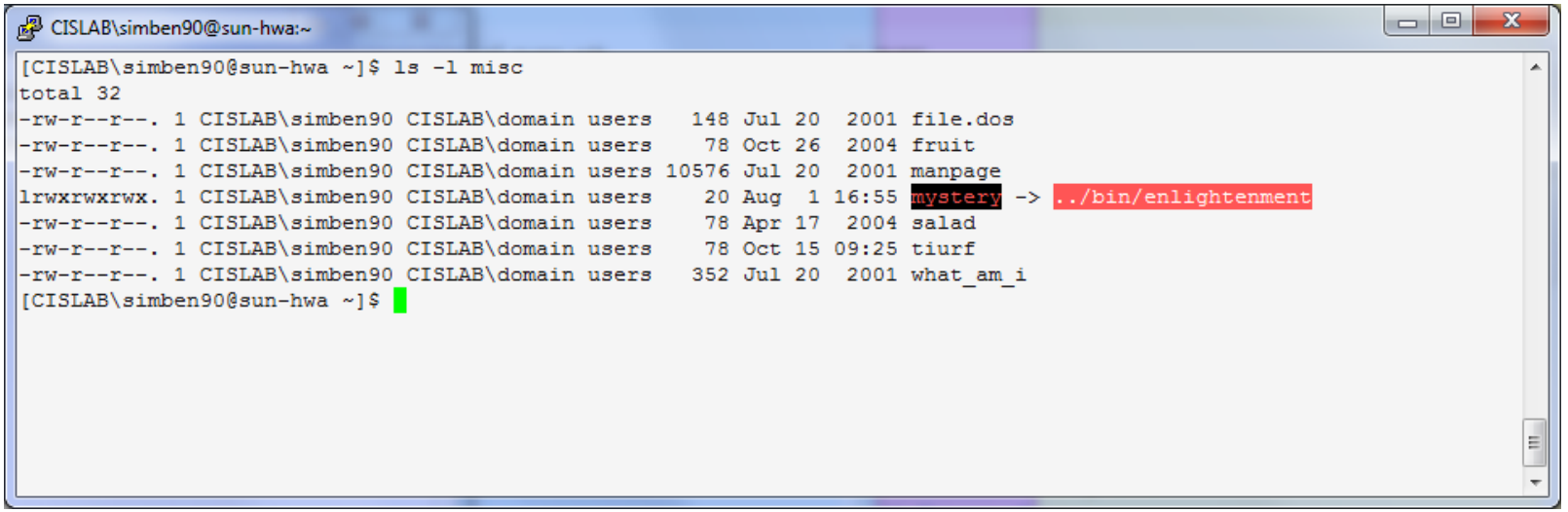
Extract tarball on Sun-Hwa

Note, misc/ directory is created and populated

Be careful, this will overwrite any files with the same name!

tar command

After extraction



Note: the symbolic link is broken because there is no enlightenment file in local bin directory on Sun-Hwa

Class Activity

Only do this if you have not started Lab X2 already:

- On Opus, locate the *dogs.tar* tarball in the CIS 90 *depot* directory
- Copy it to your home directory
- Extract the contents to your home directory
- List your new *dogs/* directory

Wrap up

Commands:

basename	- extract filename form pathname
scp	- secure copy command
tar	- archive command
if then else	- conditionals in scripts
[ ]	- for logic tests in scripts

Next Class

Project is due next week!

Backup