



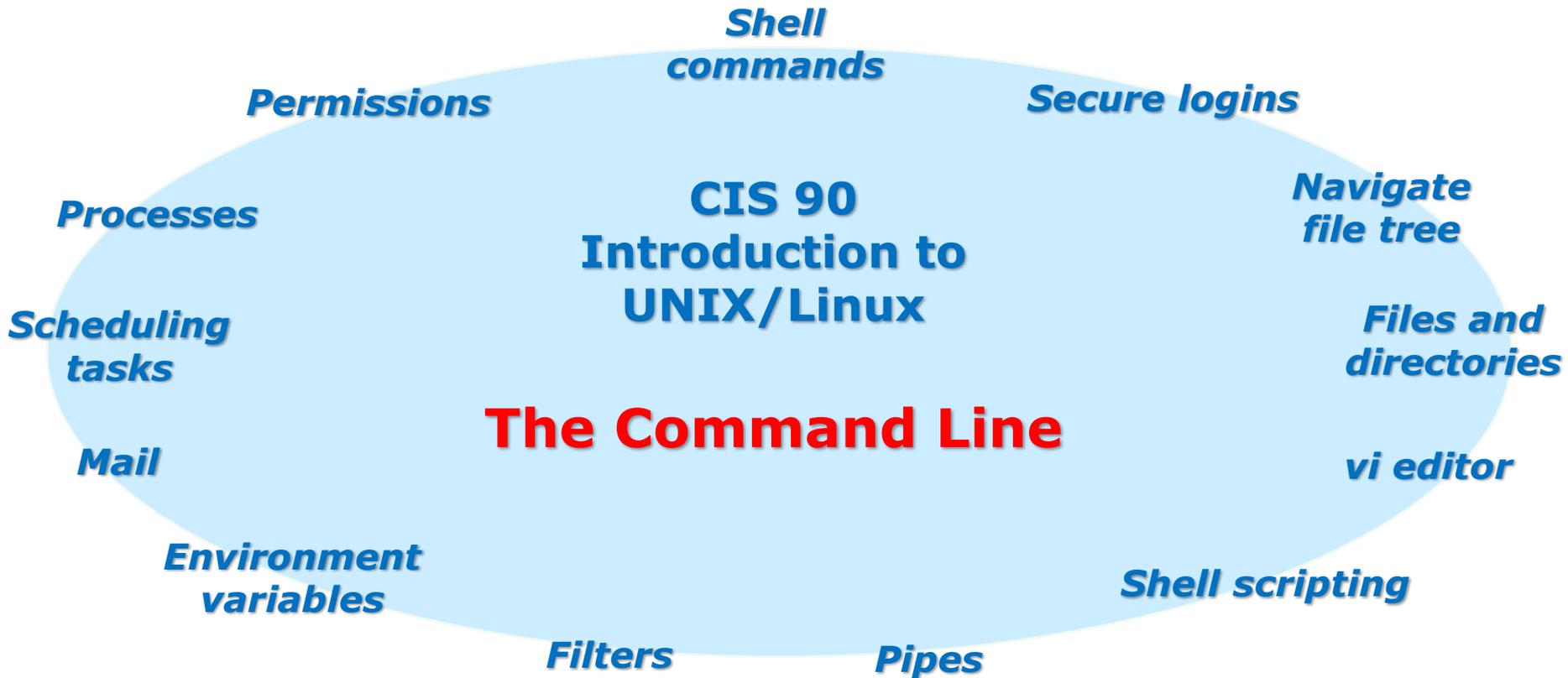
## Rich's lesson module checklist

*Last updated 02/17/2019*

- Zoom recording named and published for previous lesson
- Slides and lab posted
- Print out agenda slide and annotate page numbers
- 1<sup>st</sup> minute quiz
- Flash cards
- Calendar page updated
- Lab 3 tested
- check3 updated (dates) and tested
- scripts/schedule-submit-locks (cronjob)
- Update Jesse's checkgrades script
- Census done - Microsoft and VMware web store accounts made
- Opus-II: cis90-students alias in /etc/aliases + newaliases command
- Welcome ready for mailing
- Lab 3 Unix events ready for mailing
- sun-hwa-iii ice cream and accounts made
- rhea setup
- irssi and eh-irc tested
- 9V backup battery for microphone
- Backup slides, CCC info, handouts on flash drive
- Key card to open door

<https://zoom.us>

- Putty + slides + Chrome
- Enable/Disable attendee sharing  
^ > Advanced Sharing Options > Only Host
- Enable/Disable attended annotations  
Share > More > Disable Attendee Sharing



### **Student Learner Outcomes**

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

# Introductions and Credits



Jim Griffin

- Created this Linux course
- Created Opus and the CIS VLab
- Jim's site: <https://web.archive.org/web/20140209023942/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. John's site: <http://teacherjohn.com/>
- Jaclyn Kostner for many webinar best practices: e.g. mug shot page.



## Student checklist - Before class starts

simms-teach.com/cis90calendar.php

Rich's Cabrillo College CIS Classes  
CIS 90 Calendar

CIS 90 (Fall 2014) Calendar

Course Dates: [Calendar](#)

[CIS 90](#)

Lesson	Date	Topics	Links
		<p><b>Class and Linux Overview</b></p> <ul style="list-style-type: none"> <li>Understand how the course will work</li> <li>High-level overview of computers, operating systems, and virtual machines</li> <li>Overview of LINUX/Linux market and architecture</li> <li>Using SSH for remote network logs</li> <li>Using terminals and the command line</li> </ul>	
	9/2	<p><b>Methods</b></p> <p><a href="#">Presentation slides (download)</a></p>	<p>2.4.5 p163-172 p164-172 (high)</p>
		<p><b>Supplemental</b></p> <ul style="list-style-type: none"> <li>Howto #148: Logging into Opus (download)</li> </ul>	
		<p><b>Assignments</b></p> <ul style="list-style-type: none"> <li><a href="#">Student Survey</a></li> <li><a href="#">Lab 1</a></li> </ul>	
		<p><b>ICE Center</b></p> <p><a href="#">Enter virtual classroom</a></p>	
		<p><b>Quiz 1</b></p>	
		<p><b>Commands</b></p>	

1. Browse to:  
**http://simms-teach.com**
2. Click the **CIS 90** link.
3. Click the **Calendar** link.
4. Locate today's lesson.
5. Find the **Presentation slides** for the lesson and **download** for easier viewing.
6. Click the **Enter virtual classroom** link to join ConferZoom.
7. Log into Opus-II with Putty or ssh command.



## Student checklist - Before class starts

Google

ConferZoom

Downloaded PDF of Lesson Slides. I like Foxit Reader so I can take notes using annotations.

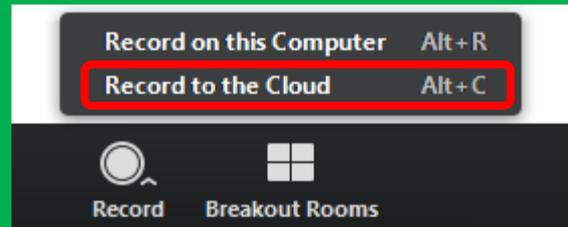
The screenshot shows a Zoom meeting interface with several windows open. The main window displays a login page for 'Rich's Cabrillo College CIS 90' with the text 'Get into the car' overlaid. Other windows include the Google homepage, the CIS 90 website's 'CIS 90 Calendar' page, and a PDF of lesson slides titled 'CIS 90 - Lesson 1' with the subtitle '90 System Playground'. The Zoom meeting controls at the bottom show 'Unmute', 'Start Video', 'Invite', 'Participants', 'Share Screen', 'Chat', 'Record', and 'Leave Meeting'.

CIS 90 website Calendar page

One or more login sessions to Opus-II

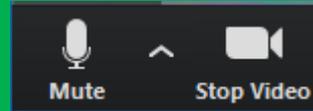


# Start



# Start Recording

Audio Check



Start Recording

# Audio & video Check



Instructor: **Rich Simms**  
Dial-in: **669-900-6833 (toll)**  
Meeting ID: **426 283 384**



Nick



Ryan



Erik



Matthew



David



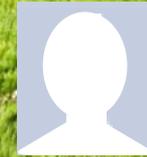
Jon



Cheryl



Wais



Cody



Tanisha



Daniel



Ohunayo



Sequoia



Scott



Lucky



Cole



Shane



Jim



Joseph



Mark

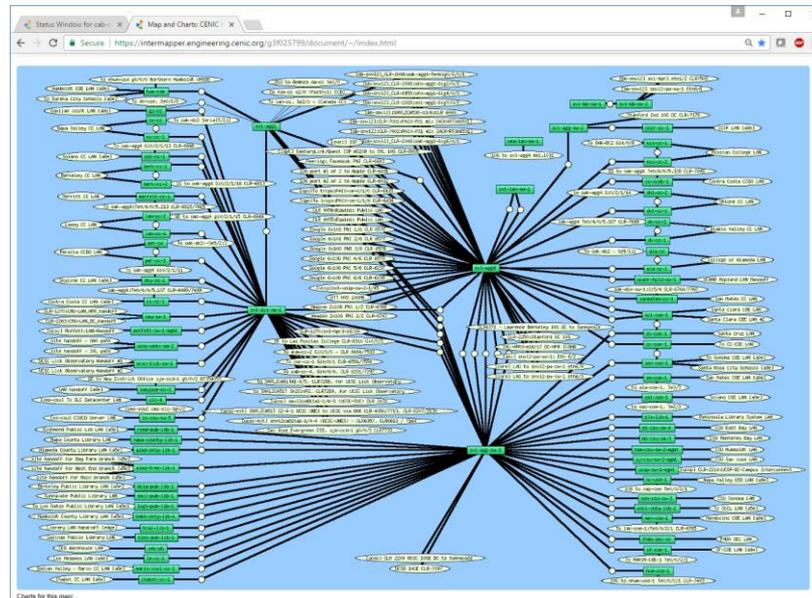


Evie



Adina

# Network Check



[https://intermapper.engineering.cenic.org/g3f025799/  
document/~!/index.html](https://intermapper.engineering.cenic.org/g3f025799/document/~!/index.html)

## First Minute Quiz

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

Use CCC Confer White Board

**email answers to: [risimms@cabrillo.edu](mailto:risimms@cabrillo.edu)**

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

# Electronic Communication

## Objectives

- Learn how to use the UNIX communication tools write and mail.
- Overview on end-to-end email.

## Agenda

- Quiz
- Questions
- Subtle stuff
- Mini review
- Practice questions
- Terminals
- Housekeeping
- Course expectations check
- Write command
- IRC
- Mail basics
- Managing mail
- More on mail
- End-to-end email
- Other MUAs, MTAs, DA and AAs
- Wrap up

## Class Activity



If you haven't already,  
log into Opus-II

## Class Activity

**Unit 3**

**Electronic Mail**

- Guest operator: Enable Work on DTC (On-The-Job) training programs
- Learn how to use the LINC communication tools: write and /bin/mail
- Overview on and to and mail

**Materials**

- Presentation slides ([download](#))

**Supplemental**

- Howto #318: Accessing vlab ([download](#))

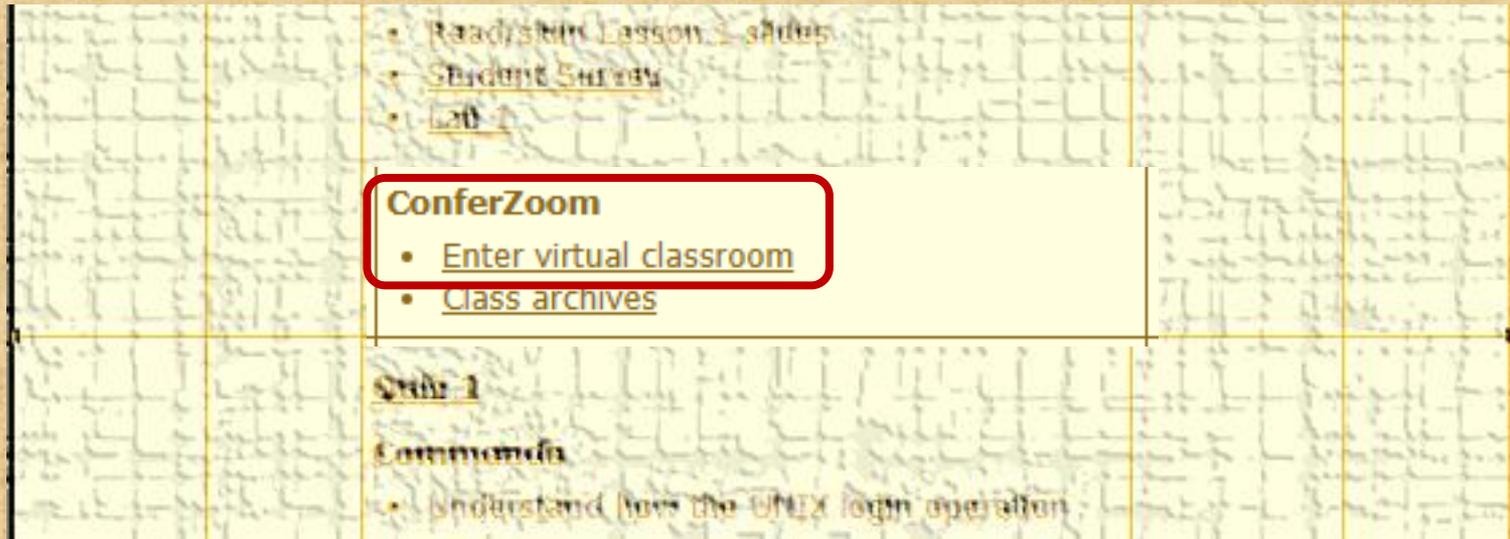
**Assignment**

- Read/skim Lesson 3 slides

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

If you haven't already,  
download the lesson slides

## Class Activity



The screenshot shows a course calendar page with a grid layout. A red box highlights the 'ConferZoom' section, which contains the following items:

- [Revisit Lesson 2 slides](#)
- [Student Survey](#)
- [Lab](#)

**ConferZoom**

- [Enter virtual classroom](#)
- [Class archives](#)

Other visible items in the calendar include:

- [Unit 1](#)
- [Command](#)
- [Understand how the UNIX login operation](#)

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

If you haven't already, join  
ConferZoom classroom



# 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.*

## Graded work is copied to your home directories

**ls**

```

simben90@oslab:~/home/cis90/simben $ ls
bigfile  Hidden          Lab2.0  log            Poems        proposal3  text.err  what_am_i
bin      lab01-collection Lab2.1  Miscellaneous  proposal1  small_town  text.fxd
empty    lab01.graded    letter  mission        proposal2  spellk      timecal
/home/cis90/simben $
  
```

*Log in to Opus-II and use the **ls** and **cat** commands to see your graded work*

**cat lab01.graded**

```

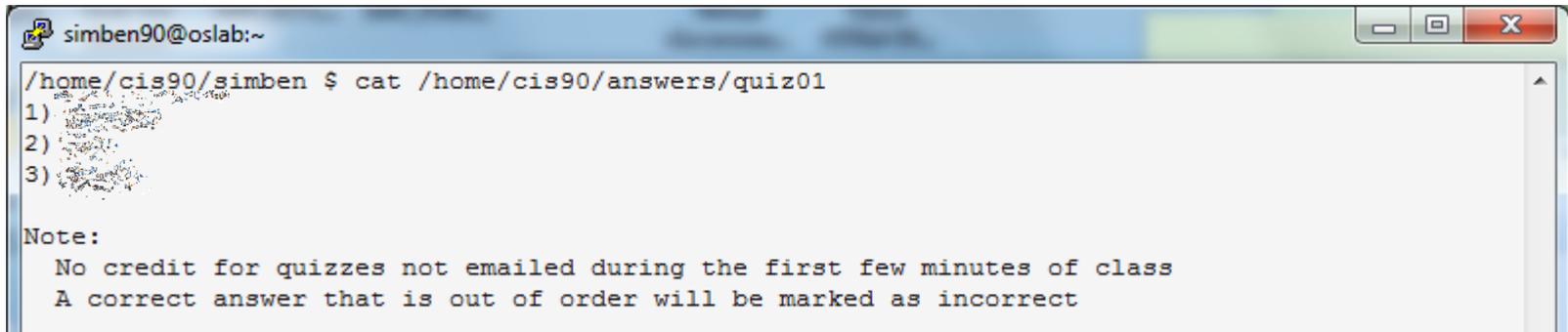
simben90@oslab:~/home/cis90/simben $ cat lab01.graded
GRADING RUBRIC (30 points)
  5 points for each correctly scavenged item.
Extra Credit
  1 point for each correct bonus question answer.

Item 1) 5 point(s)
Item 2) 5 point(s)
Item 3) 5 point(s)
Item 4) 5 point(s)
  
```

*Be sure to scroll back to the beginning of the **cat** output*

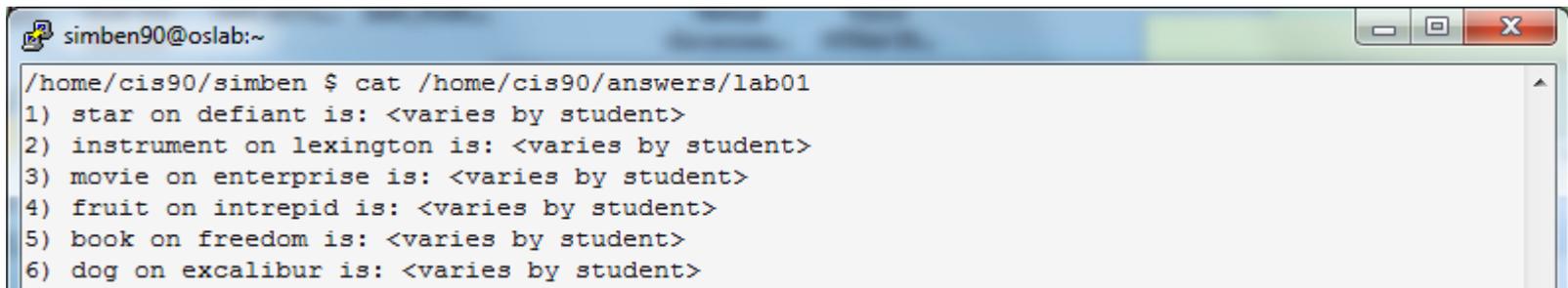
## The answers/ directory on Opus-II

```
cat /home/cis90/answers/quiz01
```



```
simben90@oslab:~  
/home/cis90/simben $ cat /home/cis90/answers/quiz01  
1)  
2)  
3)  
  
Note:  
  No credit for quizzes not emailed during the first few minutes of class  
  A correct answer that is out of order will be marked as incorrect
```

```
cat /home/cis90/answers/lab01
```



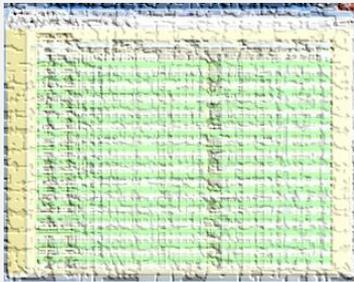
```
simben90@oslab:~  
/home/cis90/simben $ cat /home/cis90/answers/lab01  
1) star on defiant is: <varies by student>  
2) instrument on lexington is: <varies by student>  
3) movie on enterprise is: <varies by student>  
4) fruit on intrepid is: <varies by student>  
5) book on freedom is: <varies by student>  
6) dog on excalibur is: <varies by student>
```

*The answers to quizzes, tests and labs will be posted to the /home/cis90/answers/ directory after the due date has passed.*

## Review your progress in the course

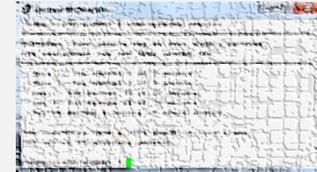
### Check the website Grades page

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



### Or check on Opus-II

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



Written by Jesse Warren a past CIS 90 Alumnus

- **Send me your survey to get your LOR codename.**
- **Graded labs and tests are in your home directories.**

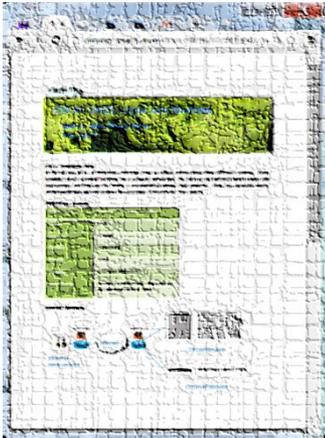
Percentage	Total Points	Letter Grade	Pass/No Pass
90% or higher	504 or higher	A	Pass
80% to 89.9%	448 to 503	B	Pass
70% to 79.9%	392 to 447	C	Pass
60% to 69.9%	336 to 391	D	No pass
0% to 59.9%	0 to 335	F	No pass

### Points that could have been earned:

1 quiz: 3 points  
1 labs: 30 points  
**Total: 33 points**

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

## Lab Assignments -- Pearls of Wisdom



- Don't wait till the last minute to start.
- Plan for things to go wrong and give yourself time to ask questions and get answers.
- The *slower* you go the *sooner* you will be finished.
- A few minutes reading the forum can save you hour(s).
- Line up materials, references, equipment and software ahead of time.
- It's best if you fully understand each step as you do it. Use Google or refer back to lesson slides to understand the commands you are using.
- Keep a growing cheat sheet of commands and examples.
- Study groups are very productive and beneficial.
- Use the forum to collaborate, ask questions, get clarifications and share tips you learned while doing a lab.
- **Late work is not accepted** so submit what you have for partial credit.

## Getting Help When Stuck on an Assignment

- Google the topic/error message.
- Search the Lesson Slides (they are PDFs) for a relevant example on how to do something.
- Check the forum. Someone else may have run into the same issue and found a way past it. If not start a new topic, explain what you are trying to do and what you have tried so far.
- Talk to a tutor/assistant at the CTC (room 1403) or CIS Lab (STEM Center).
- Come see me during my office or lab hours:

<https://www.cabrillo.edu/salsa/listing.php?staffId=1426>

**I'm in the CTC (room 1403) every Tuesday from 3:30-6:00 pm.**

- Make use of the Open Questions time at the start of every class.
- Make a cheat sheet of commands and examples so you never again get stuck on the same thing!

*CIS Labs always involve some troubleshooting!*

# Help Available! In the CTC and CIS Lab

## Rich's Cabrillo College CIS Classes CIS 90 Calendar

Home

Resources

Forums

**Tutors**

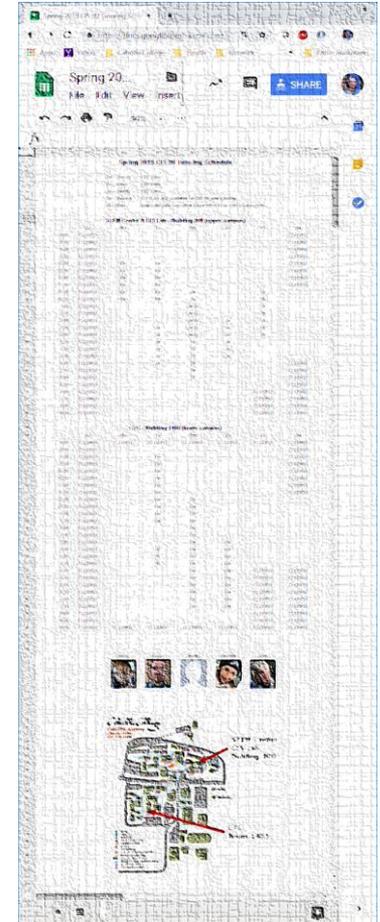
Canvas

Cabrillo College  
Cabrillo Gallery  
Library #1002  
831-479-6308

CIS Lab  
in STEM Center  
Building 800

*To see tutor  
schedule, click  
the Tutors link  
on the  
website.*

*Instructors, tutors  
and equipment are  
available for CIS  
students to work on  
assignments.*



CTC  
Room 1403

# Help Available! In the CTC and CIS Lab

**Rich's Cabrillo College CIS Classes**  
CIS 90 Calendar

Home Resources Forums **Tutors** Canvas

*To see tutor schedule, click the  
Tutors link on the website.*



*The CIS Lab is in the STEM  
center (Building 800)*



*Room 1403 is in the  
CTC (Building 1400)*



## The slippery slope



- 1) If you didn't submit Lab 1 ...
- 2) If you were here on time and didn't submit Quiz 1 or Quiz 2 ...
- 3) If you didn't send me the student survey assigned in Lesson 1 ...
- 4) If you haven't read the forum or made a post ...
- 5) If you haven't started last week's assignment that is due today ...
- 6) If you haven't logged into Opus-II or your Arya ...

*Please contact me by email, see me during my office hours or when I'm in the CTC*

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

# Passwords

# If you haven't already

## Change your default password on Opus-II

```
[simben90@opus-ii ~]$ passwd  
Changing password for user simben90.  
Changing password for simben90.  
(current) UNIX password:  
New password:  
Retype new password:  
passwd: all authentication tokens updated successfully.  
[simben90@opus-ii ~]$
```

*Note: passwords  
are never echoed  
as you type them*

*This changes your password on Opus-II only  
(NOT other VMs, the forum or Canvas)*

# Subtle Stuff

## Who else is logged in?

```
[rsimms@excalibur ~]$ who
simben90 :0                2015-09-16 08:36 (:0)
jadzia pts/0                2015-09-16 08:41 (freedom.cis.cabrillo.edu)
rsimms pts/1                2015-09-16 08:36 (opus.cis.cabrillo.edu)
worf pts/3                 2015-09-16 08:42 (2601:647:cb02:9eed:78d1:ef8f:7225:43e5)
simben90 pts/2             2015-09-16 08:38 (:0)
[rsimms@excalibur ~]$
```

```
[rsimms@excalibur ~]$ who -Hu
NAME      LINE      TIME          IDLE          PID COMMENT
simben90 :0      2015-09-16 08:36 ?             13924 (:0)
jadzia pts/0     2015-09-16 08:41 00:01        15092 (freedom.cis.cabrillo.edu)
rsimms pts/1     2015-09-16 08:36 .             14270 (opus.cis.cabrillo.edu)
worf pts/3     2015-09-16 08:42 .             15181 (2601:647:cb02:9eed:78d1:ef8f:7225:43e5)
simben90 pts/2     2015-09-16 08:38 00:02        14876 (:0)
[rsimms@excalibur ~]$
```

```
[rsimms@excalibur ~]$ w
08:43:17 up 11 days, 10:10, 5 users, load average: 0.02, 0.14, 0.13
USER      TTY      LOGIN@      IDLE      JCPU      PCPU      WHAT
simben90 :0      08:36      ?xdm?    13:51     0.33s    0.33s    gdm-session-worker [pam/gdm-password]
jadzia pts/0     08:41      1:44     0.03s    0.03s    -bash
rsimms pts/1     08:36      5.00s    0.04s    0.00s    w
worf pts/3     08:42      5.00s    0.02s    0.00s    ping netlab.cis.cabrillo.edu
simben90 pts/2     08:38      2:53     0.35s    0.32s    top
[rsimms@excalibur ~]$
```



## Putty to: **rsimms@opus-ii.cis.cabrillo.edu** VS **opus-ii.cis.cabrillo.edu**

Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address)	Port
rsimms@opus-ii.cis.cabrillo.edu	2220

Connection type:

Raw
  Telnet
  Rlogin
  SSH
  Serial

```
rsimms@oslab:~/cis90/labx1/graded
login as: rsimms
rsimms@opus-ii.cis.cabrillo.edu's password: █
```

*If you specify the username in Putty you won't be prompted for it, just the password.*

Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address)	Port
opus-ii.cis.cabrillo.edu	2220

Connection type:

Raw
  Telnet
  Rlogin
  SSH
  Serial

```
rsimms@oslab:~/cis90/labx1/graded
login as: █
```

*If you specify only the hostname in Putty you get prompted for both username and password.*

*Tip: Use the Putty "Saved Sessions" for your Opus-II connection. Then you don't have to type in the username, hostname and port number each time you connect to Opus.*



## ssh arya-XX vs ssh cis90@arya-XX

*(your Opus-II accounts are NOT on the Arya systems)*

```

simben90@oslab:~
/home/cis90/simben $ ssh arya-35
simben90@arya-35's password:
Permission denied, please try again.
simben90@arya-35's password:
Permission denied, please try again.
simben90@arya-35's password:
Permission denied (publickey)
/home/cis90/simben $

cis90@Arya-35: ~
/home/cis90/simben $ ssh cis90@arya-35
cis90@arya-35's password:
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-35-generic x86_64)

* Documentation:  https://help.ubuntu.com/
  
```

*If you don't specify the username the **ssh** command will use the username you are currently logged in as. This account may not exist on the remote system!*

## type and man caveats

**Usually**, to find the location of a command on your path, use the **type** command:

```
/home/cis90/simben $ type hostname  
hostname is /usr/bin/hostname
```

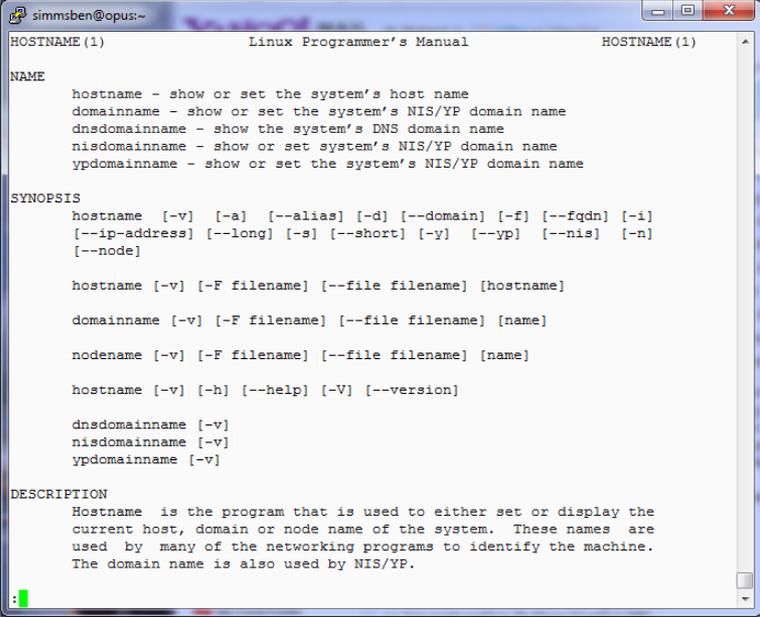
*The hostname program file is  
in the /usr/bin directory*



## type and man caveats

**Usually**, to find the manual page for a command, use the **man** command:

```
/home/cis90/simben $ man hostname
```



```

simmsben@opus:~
HOSTNAME(1)                Linux Programmer's Manual                HOSTNAME(1)

NAME
  hostname - show or set the system's host name
  domainname - show or set the system's NIS/YP domain name
  dnsdomainname - show the system's DNS domain name
  nisdomainname - show or set system's NIS/YP domain name
  ypdomainname - show or set the system's NIS/YP domain name

SYNOPSIS
  hostname [-v] [-a] [--alias] [-d] [--domain] [-f] [--fqdn] [-i]
  [--ip-address] [--long] [-s] [--short] [-y] [--yp] [--nis] [-n]
  [--node]

  hostname [-v] [-F filename] [--file filename] [hostname]

  domainname [-v] [-F filename] [--file filename] [name]

  nodename [-v] [-F filename] [--file filename] [name]

  hostname [-v] [-h] [--help] [-V] [--version]

  dnsdomainname [-v]
  nisdomainname [-v]
  ypdomainname [-v]

DESCRIPTION
  Hostname is the program that is used to either set or display the
  current host, domain or node name of the system. These names are
  used by many of the networking programs to identify the machine.
  The domain name is also used by NIS/YP.
  
```

## Command Review

However,

Sometimes you may get something different than expected with the **type** and **man** commands

## type and man caveats

```
/home/cis90/simmsben $ type ls  
ls is aliased to `ls --color=tty`
```

*If the command is an alias (which we will learn about later) the type command by default doesn't show where the command resides on the path*

```
/home/cis90/simmsben $ type -a ls  
ls is aliased to `ls --color=tty`  
ls is /usr/bin/ls
```

*To get around that use the **-a** option*

*The ls program file resides in the /usr/bin directory*

*The **ls** command is aliased, use the **-a** option on the **type** command to find where the command resides on the path*

## type and man caveats

```
/home/cis90/simben $ type history
```

```
history is a shell builtin
```

The **history** command is built into the shell and does not have its own program file

```
/home/cis90/simben $ man history
```

```
simmsben@opus:~
BASH_BUILTINS (1)
NAME
  bash, :, ., [, alias, bg, bind, break, builtin, cd, command, compgen,
  complete, continue, declare, dirs, disown, echo, enable, eval, exec,
  exit, export, fc, fg, getopts, hash, help, history, jobs, kill, let,
  local, logout, popd, printf, pushd, pwd, read, readonly, return, set,
  shift, shopt, source, suspend, test, times, trap, type, typeset,
  ulimit, umask, unalias, unset, wait - bash built-in commands, see
  bash(1)
BASH BUILTIN COMMANDS
  Unless otherwise noted, each builtin command documented in this section
  as accepting options preceded by - accepts -- to signify the end of the
  options. For example, the :, true, false, and test builtins do not
  accept options. Also, please note that while executing in non-interactive
  mode and while in posix mode, any special builtin (like ., :,
  break, continue, eval, exec, exit, export, readonly, return, set,
  shift, source, times, trap, unset) exiting with a non-zero status
  causes the shell to stop execution.
  : [arguments]
    No effect; the command does nothing beyond expanding arguments
    and performing any specified redirections. A zero exit code is
```

The **history** command does not have its own man page either!

... but it is included in the man page for bash builtins

Either scroll down or use /history



# Lesson 2

# Recaps

(from Lesson 2)

## *Shell Slides*

<https://simms-teach.com/docs/cis90/cis90-six-steps.pdf>

## *Life without a path*

<https://simms-teach.com/docs/cis90/cis90-life-with-no-path.pdf>

## *Using VLab*

<https://simms-teach.com/docs/cis90/cis90-Using-VLab.pdf>

# Mini Review

### Expectation Check

Commands you should understand and be comfortable using

Lesson/Lab 1		Lesson/Lab 2	
Commands	Files & Directories	Commands	Files & Directories
cal clear date exit history hostname id ps ssh uname tty who who am i	/etc/issue /etc/*-release	apropos banner bash bc cat cd echo env file finger info file ls passwd set type man whatis	/bin /usr/bin /sbin /usr/sbin /etc/passwd /etc/shadow

*If you have any questions on these commands, post a question on the forum!*

## Class Activity

In what file are all the encrypted passwords kept?

*Put your answer in the chat window*

## ssh command

Syntax:

**ssh -p** *port username@hostname*

Examples:

```
ssh -p 2220 simben90@son-of-opus.simms-teach.com
```

```
ssh -p 22 cis90@rhea.cis.cabrillo.edu
```

Syntax shortcuts:

- If the port is 22, then it does not need to be specified.
- If the username is the same on the remote system it can be left off.
- If domain suffixes are automatically added they can be left off.

For example Benji could use any of the commands below to log into daughter-of-opus from Opus-II:

```
ssh -p 22 simben90@daughter-of-opus.cis.cabrillo.edu
```

```
ssh simben90@daughter-of-opus.cis.cabrillo.edu
```

```
ssh daughter-of-opus.cis.cabrillo.edu
```

```
ssh daughter
```

*The ssh command is used to log into a remote system*

## Class Activity

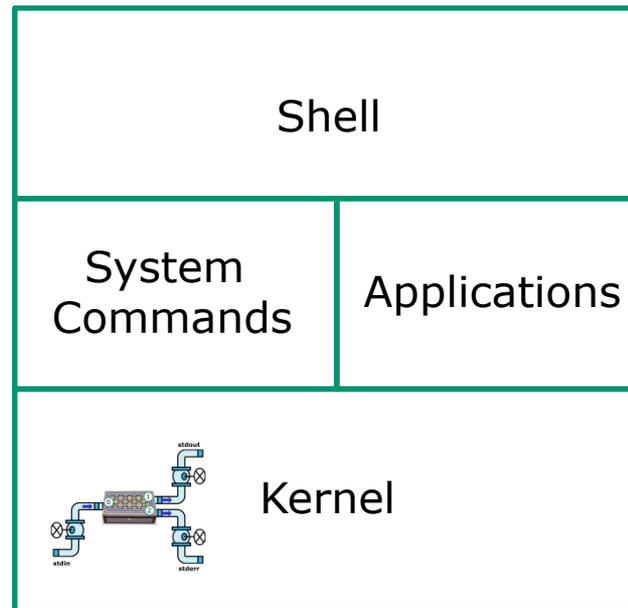
Use ssh to login as the cis90 user on the Rhea system (port 22).

Which terminal device are you using on Rhea?

*Put your answer in the chat window*

# Key components of the Linux/UNIX architecture

*Users interact with the shell to run commands*



*Commands such as ls, cal, date, tty, id, who, etc.*

*Web servers, databases, word processors, etc.*



*The kernel manages processes, memory, file system, and the network stack and interacts with all the hardware components*

## Class Activity

*If you haven't already, ssh to the Rhea system (port 22)  
and login as cis90.*

What kernel is running on Rhea?

*Put your answer in the chat window*

## Class Activity

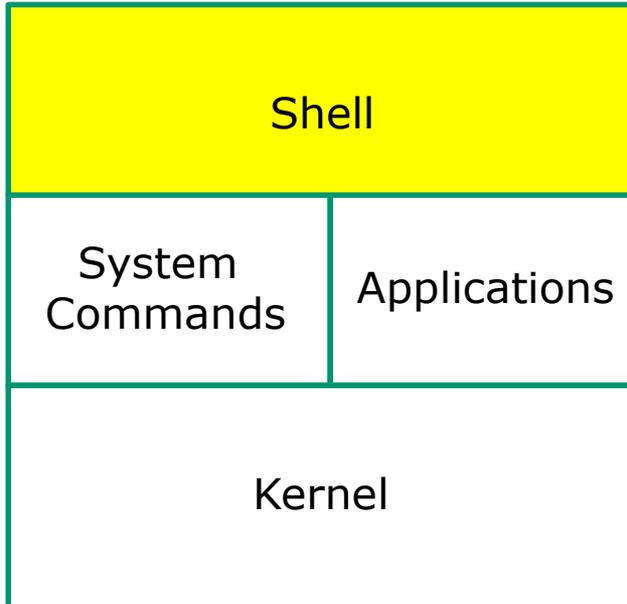
*If you haven't already, ssh to the Rhea system (port 22)  
and login as cis90.*

What shell are you running on Rhea?

*Put your answer in the chat window*



# Life of the Shell



- 1) Prompt
- 2) Parse
- 3) Search
- 4) Execute
- 5) Nap
- 6) Repeat



## Class Activity

*If you haven't already, ssh to the Rhea system (port 22) and login as cis90.*

As the cis90 user on Rhea enter this command:

```
ls -lt /usr/games
```

How many directories on the path did the shell have to search to locate the command used above?

*Put your answer in the chat window?*

## Class Activity

*If you haven't already, ssh to the Rhea system (port 22) and login as cis90.*

As the cis90 user on Rhea enter this command:

```
ls -z /bin
```

Which program, ls or the shell, output the error message?

*Put your answer in the chat window?*

## Class Activity

*If you haven't already, ssh to the Rhea system (port 22) and login as cis90.*

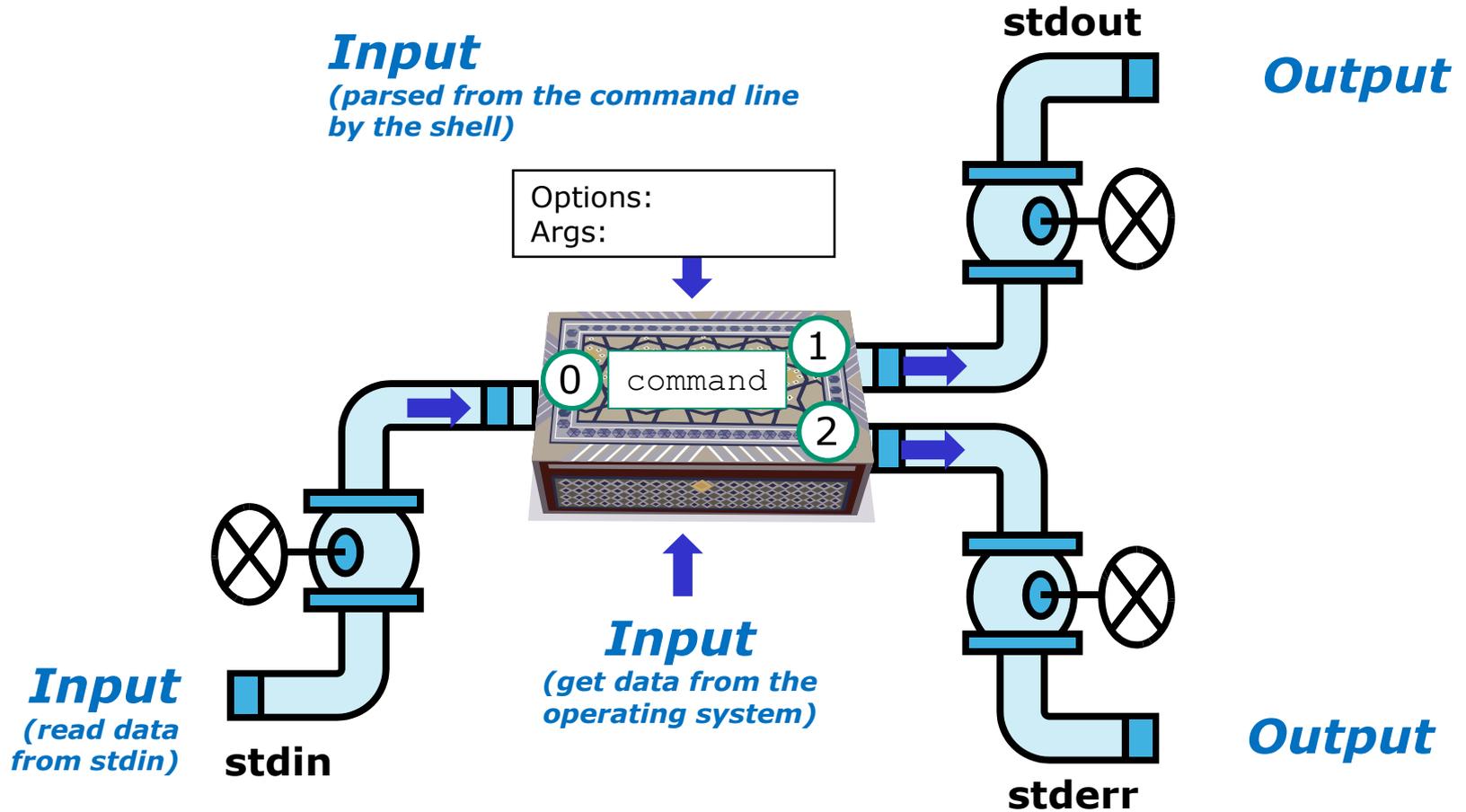
As the cis90 user on Rhea enter this command:

```
lls -z /bin
```

Which program, ls or the shell, output the error message?

*Put your answer in the chat window?*

# Inputs and Outputs



The three file descriptors provided to every process are named **stdin**, **stdout** and **stderr**

## Class Activity

As the cis90 user on Rhea enter this command:

```
banner Hola
```

Where does the **banner** command on Rhea get its input from?

- a) The command line (passed in by the shell)
- b) The keyboard (read from stdin)
- c) The operating system

*Put your answer in the chat window*

## Answer

In what file are all the encrypted passwords kept?

*/etc/shadow*



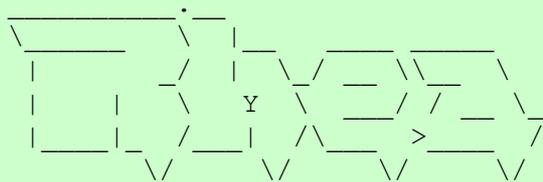


## Class Activity

*If you haven't already, ssh to the Rhea system (port 22) and login as cis90.*

### What shell is running on Rhea?

```
/home/cis90/simben $ ssh cis90@rhea
Password for cis90@rhea:
Last login: Wed Feb  8 06:54:35 2017 from opus.cis.cabrillo.edu
FreeBSD 10.0-RELEASE-p18 (GENERIC) #0: Wed Feb 25 01:08:00 UTC 2015
```



```
< snipped >
$ echo $SHELL
/bin/sh
$ ps
  PID TT  STAT      TIME COMMAND
 4999  0   Ss   0:00.00 -sh (sh)
 5001  0   R+   0:00.00 ps
$
```

*The sh (Bourne shell) is running on Rhea*

## Answer

*If you haven't already, ssh to the Rhea system (port 22) and login as cis90.*

As the cis90 user on Rhea enter this command:

```
ls -lt /usr/games
```

How many directories on the path did the shell have to search to locate the command used above?

```
$ type ls  
ls is /bin/ls  
$ echo $PATH  
/sbin:/bin:/usr/sbin:/usr/bin:/usr/games:/usr/local/sbin:/usr/local/bin:/home/cis90/bin
```

*The shell had to search two directories. The first was /sbin and the second was /bin.*

## Class Activity

*If you haven't already, ssh to the Rhea system (port 22) and login as cis90.*

As the cis90 user on Rhea enter this command:

```
ls -z /bin
```

Which program, ls or the shell, output the error message?

```
$ ls -z /bin
ls: illegal option -- z
usage: ls [-ABCFGHILPRSTUWZabcdefghiklmnopqrstuvwxy1,] [-D format] [file ...]
$
```

- 1) Prompt
- 2) Parse
- 3) Search
- 4) Execute
- 5) Nap
- 6) Repeat

*The ls command, during the execute step, output the error message.*

## Class Activity

*If you haven't already, ssh to the Rhea system (port 22) and login as cis90.*

As the cis90 user on Rhea enter this command:

```
lls -z /bin
```

Which program, ls or the shell, output the error message?

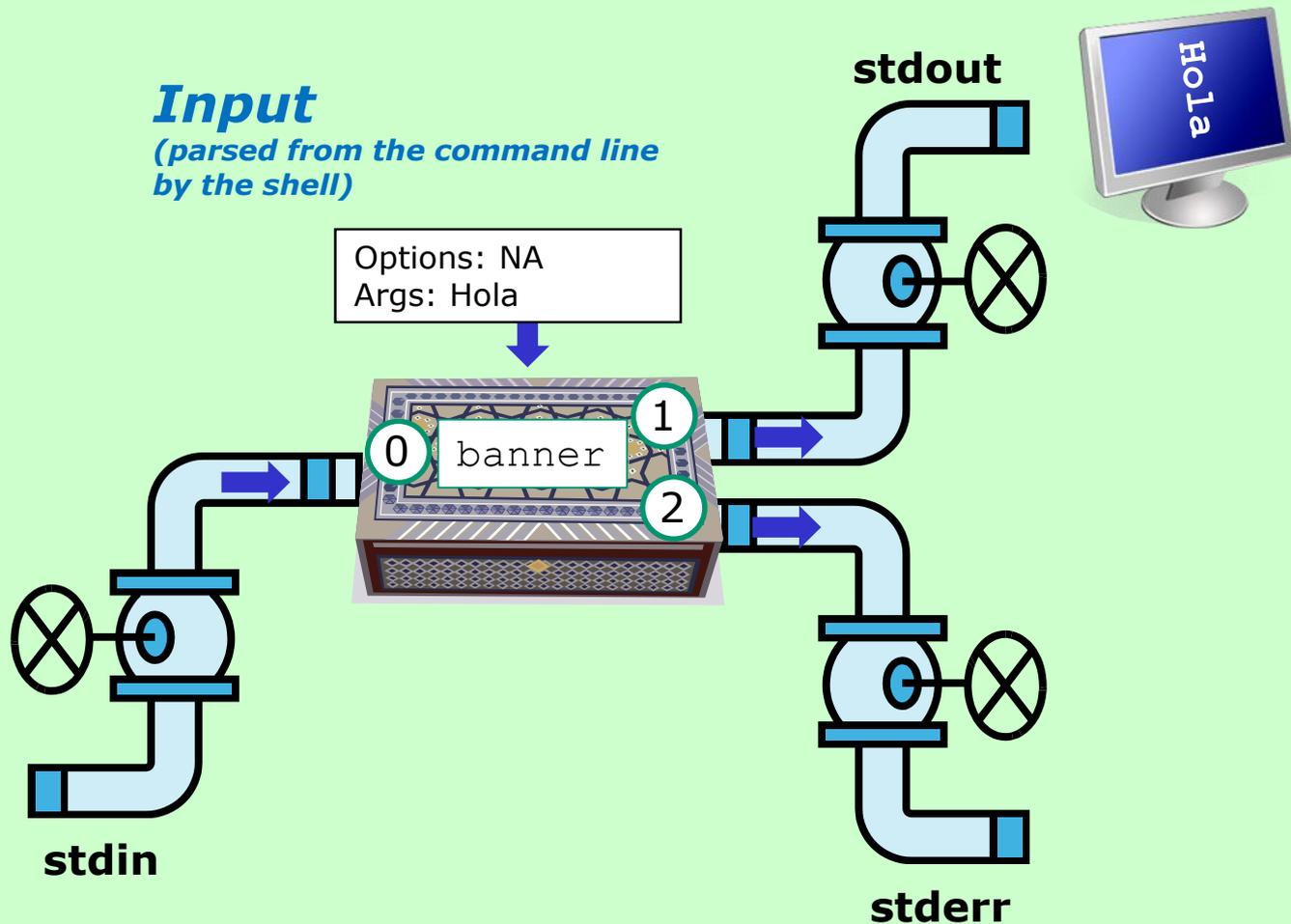
```
$ lls -z /bin  
lls: not found  
$
```

- 1) Prompt
- 2) Parse
- 3) Search
- 4) Execute
- 5) Nap
- 6) Repeat

*The shell, during the search step, output the error message.*

# Answer

\$ **banner Hola**



The **banner** command is an example of a command that gets its input **from the command line**.



# Practice Questions sun-hwa-iii

## My favorite ice cream shop



Source: [http://attractions.uptake.com/blog/files/2008/10/dsc\\_0002.jpg](http://attractions.uptake.com/blog/files/2008/10/dsc_0002.jpg)

## Practice Test Questions

Use **exit** to return back to Opus-II.

What command could be used on Opus-II to log into this remote system:

**hostname:** sun-hwa-iii.cis.cabrillo.edu

**username:** *same as your Opus-II username*

**port:** 22

*Write your command in the chat window*

## Practice Test Questions

Log into sun-hwa-iii and run the **icecream** command.

*Copy your ice cream flavor into the chat window.*

## Practice Test Questions

On Sun-Hwa-III, is the **icecream** command on your path?

*Write your answer in the chat window*

## Practice Test Questions

On Sun-Hwa-III, what kind of a file is the **icecream** command?

*Write your answer in the chat window*

## Practice Test Questions

On Sun-Hwa-III, how many directories does the shell have to search to locate the **icecream** command on your path?

*Write your answer in the chat window*

## Practice Test Questions

Is **icecream** a standard UNIX command?

*Write your answer in the chat window*

## Practice Test Questions

Is Sun-Hwa-iii a Linux or UNIX system?

*Write your answer in the chat window*

## Practice Test Questions

What distro has been installed on Sun-Hwa-III?

*Write your answer in the chat window*

## Answer

1) What command could be used on Opus-II to log into this remote system:

**hostname:** sun-hwa-iii.cis.cabrillo.edu

**username:** *same as your Opus-II username*

**port:** 22

**Answer: ssh sun-hwa-iii**

## Answer

On Sun-Hwa-III, is the **icecream** command on your path? If so what directory is it in?

*If the shell can find it when you run it then it is on your path!*

```
[simben90@sun-hwa-iii ~]$ icecream
```

```
Welcome to Sun-Hwa-III Benji!  
You get 10-20 icecream today.  
Hope you like it. Have a great day!
```

*Use the **type** command to find the first directory on your path containing the command*

```
[simben90@sun-hwa-iii ~]$ type icecream  
icecream is /usr/local/bin/icecream  
[simben90@sun-hwa-iii ~]$
```

**Answer:** YES, the **icecream** command is in the `/usr/local/bin` directory

## Answer

On Sun-Hwa-III, what kind of file is the **icecream** command?

*Use the **file** command to probe and get extended file type information*

```
[simben90@sun-hwa-iii ~]$ file /usr/local/bin/icecream  
/usr/local/sbin/icecream: Bourne-Again shell script, ASCII text  
executable  
[simben90@sun-hwa-iii ~]$
```

**Answer:** BASH shell script

## Answer

On Sun-Hwa-III, how many directories does the shell have to search to locate the **icecream** command on your path?

*Echo the PATH environment variable to see the order of the directories on the path*

```
simben90@Sun-Hwa-III:~$ type icecream  
icecream is hashed (/usr/local/bin/icecream)
```

```
simben90@Sun-Hwa-III:~$ echo $PATH  
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/g  
ames:/usr/local/games
```

*Note the colon character : is used to delimit one directory from the next*

**Answer:** Two

- 1) /usr/local/sbin
- 2) /usr/local/bin ←

## Answer

On Sun-Hwa-III, is **icecream** a standard UNIX command?

*Use the **man** command to see if there is any documentation on **icecream***

```
[simben90@sun-hwa-iii ~]$ man icecream  
No manual entry for icecream  
See 'man 7 undocumented' for help when manual pages are not available.
```

**Answer:** NO

## Answer

Is Sun-Hwa-iii a Linux or UNIX system?

*Use the **uname** command to show the name of the kernel*

```
[simben90@sun-hwa-iii ~]$ uname  
Linux
```

**Answer:** Linux

## Answer

What distro has been installed on Sun-Hwa-iii?

*Use **cat /etc/issue** or **cat /etc/\*-release**  
to show the distro*

```
[simben90@sun-hwa-iii ~]$ cat /etc/issue  
Ubuntu 14.04 LTS \n \l  
[simben90@sun-hwa-iii ~]$
```

**Answer:** Ubuntu 14.04

# Terminals

## Hardware Terminals



**Teletype (TTY)**



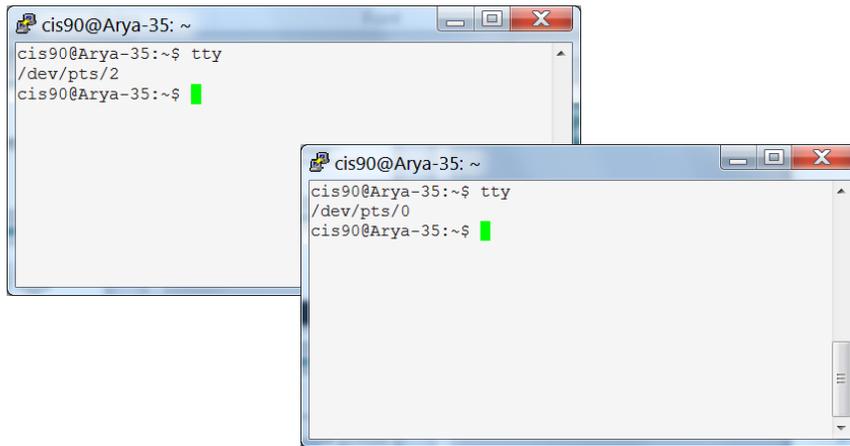
**VT100**



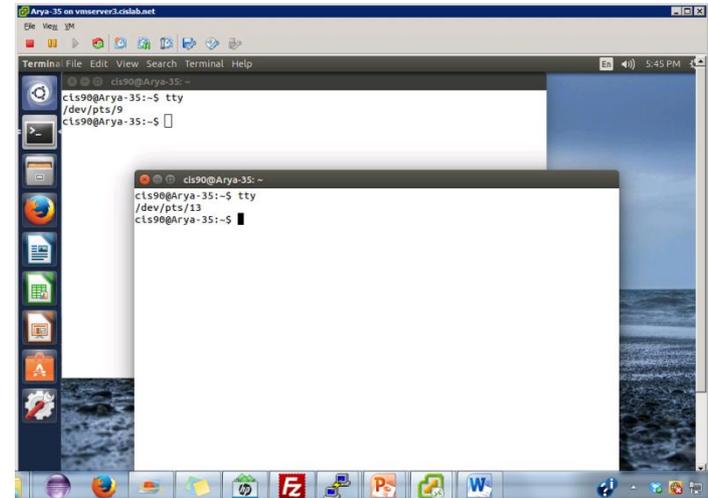
Terminals were used in the old days to interact with "minicomputers" and "mainframe" computers.

Today we use **terminal emulators** instead that are software programs.

# Software Terminals



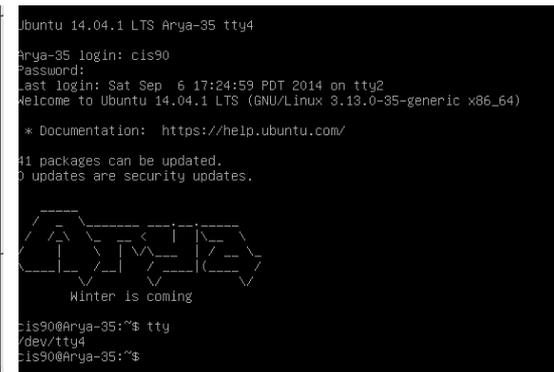
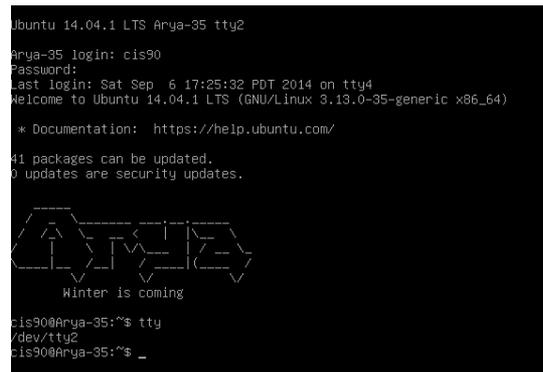
**Terminal emulators like PuTTY** (with scroll bars, colors, customizable backgrounds, fonts and sizes) for Windows



**Graphical terminals** (with scroll bars, colors, customizable backgrounds, fonts and sizes) built into Linux/Mac computers

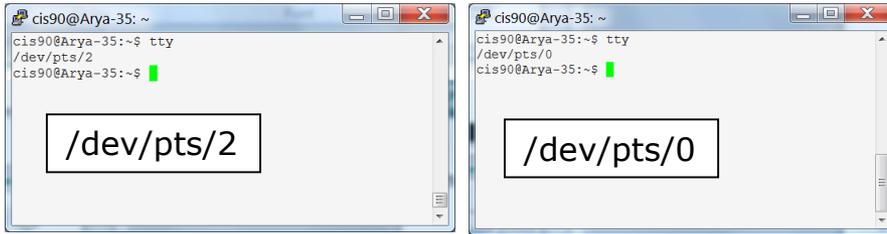
## Virtual terminals (use ctrl-alt-fn)

Bare bones, no scroll bars,  
also called a console



# Various terminal devices on an Arya VM

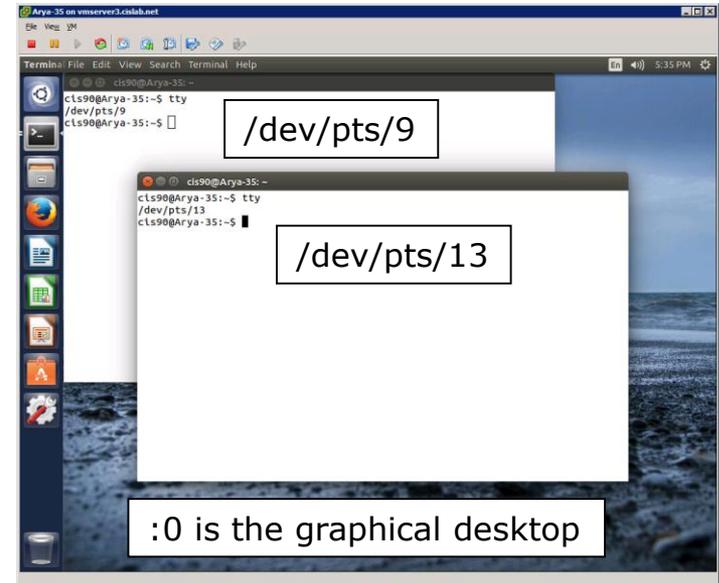
## Terminal emulators (e.g. Putty)



```
cis90@Arya-35:~$ who
cis90  tty4      2014-09-06 17:25
cis90  tty2      2014-09-06 17:25
cis90  pts/2      2014-09-06 17:20 (enterprise.cis.cabrillo.edu)
cis90  :0          2014-09-06 17:20 (:0)
cis90  pts/0      2014-09-06 17:21 (2601:9:6680:53b:4d09:e2b6:e7fc:d999)
cis90  pts/9      2014-09-06 17:22 (:0)
cis90  pts/13     2014-09-06 17:23 (:0)
```

*pts=pseudo terminal,  
tty=teletype  
:n=an X window display number*

## Graphical terminals on graphical desktop



## Virtual terminals



# Housekeeping





Pause/Stop Recording

# Pause Recording

Audio Check

# Roll Call

If you are watching the archived video please email me to let me know you were here.

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

# Overlap Students

Don't forget to update the Google  
Docs Log when watching the  
recording



Resume/Stop Recording

# Resume Recording

## Audio Check

## Lab 2 due tonight

- Use **history -a** before every **submit**.
  - ❖ If you neglect to do this, the history snapshot you send me to grade will not have the latest commands you issued.
- Run **check2** to make sure you didn't miss anything.
- Submit as many times as you wish up to 11:59PM Opus-II time. You must submit your work to get credit.
- No credit for late work. Submit what you have for partial credit if you run out of time.
- You can optionally use the **verify** command to see what you submitted for grading.
  - ❖ To grade, I will check your submitted history to see if you used all the commands asked for in Lab 2 as well as your answers to the three questions.

## Forum

oslab.cishawks.net/forum/attachment.php?d=143264&ac=0&id=11332&as=1&as=0

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

Search:

Directed

CIS 90

Forum rules  
Be nice to others

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Using virtualBox for fun and education  
by Robert Lemon • Sat Feb 11, 2011 11:17 am

Microsoft and VMware academic webstores  
by Robert Lemon • Sat Feb 11, 2011 11:16 am

Rich Simms

Rich Simms

## Extra Credit

In lesson slides  
(search for extra credit)

### On the forum

Be sure to monitor the forum as I may post extra credit opportunities without any other notice!

### On some labs

**Extra credit (2 points)**

For a small taste of what you would learn in CIS 191 let's add a new user to your Arya VM. Once added we will see how the new account is represented in `/etc/passwd` and `/etc/shadow`.

1. Log into your Arya VM as the cis90 user. Make sure it's your VM and not someone else's.
2. Install the latest updates:  
`sudo apt-get update`  
`sudo apt-get upgrade`
3. Add a new user account for yourself. You may make whatever username you wish. The example below shows how Benji would make the same username he uses on Opus:  
`sudo useradd -G sudo -c "Benji Simms" -m -s /bin/bash simben90`



### On the website

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

For some flexibility, personal preferences or family emergencies there is an additional 90 points available of **extra credit** activities.

<http://simms-teach.com/cis90extracredit.php>

• **Website content review** - The first person to email the instructor pointing out an error or typo on this website will get one point of extra credit for each unique error. The email must specify the specific document or web page, pinpoint the location of the error, and specify what the correction should be. Duplicate errors count as a single point. This does not apply to pre-published material that has been updated but not yet presented in class. (Up to 20 points total)

# Extra Credit

Another 90 points is available from **extra credit** assignments. Students can track their overall progress on the chart below. Contact the instructor by email with any questions.

				Forum				Labs										Final		
Q9	Q10	T1	T2	T3	F1	F2	F3	F4	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	Project	CTC
	3	30	30	30	20	20	20	20	30	30	30	30	30	30	30	30	30	30	60	
									30											
									30											

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

*Note the caps on extra credit.*

## Typos and HowTo's

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#### CIS 90 Extra Credit

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#### General Options

Any combination of the following can be done to earn extra credit up to the maximum amount shown on the Grades page:

- **Web site content review** - The first person to email the instructor pointing out an error or typo on this website will get one point of extra credit per content error found. This includes any errors found on the instructor's downloaded materials that have been covered in class. It does not include lesson PowerPoints or Labs that have not yet been covered in class but are pre-published on the website. **(Up to 20 points total)**
- **Develop new Howtos** - Investigate and develop a Howto on a new topic area you are interested in. At the Instructor's discretion and your permission, these Howtos will be published on this web site on the Resources page. Make a proposal first to the instructor on the topic area and to determine the amount of extra credit. Submittals must follow the format of the instructor's Howtos on the Resources web page and be web publishable. **(Up to 20 points per Howto)**
- **Optional activities in lab assignments** - Some of the lab assignments will have optional activities that can be worked for extra credit.
- **Lab assignments** - Some courses may have one or more extra credit labs. Check the Calendar web page. (Point amount varies)

Extra Credit Howtos

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CIS 90 VLab VM Assignments

RIP Dennis Ritchie

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**Howtos**

- HowtoForge
- DNS
- Ethernet (NIC drivers)
- NFS
- NIS
- PPP
- Putty SSH Keys

**Student Howtos**

- Replacing a MacBook Pro Hard Drive by Amr Sorour
- Logging into Opus from a Mac by Laura Sreckovic and updated by Ann Pike
- Monitor Script by Sean Callahan

**Linux Commands**

- Practical
- Command

**Training and Tutorials**

- Linux Basics

**Wifi Penetration**  
Wireless Communication and Computer/Network Forensics

**Understanding /bin/mail :  
Lost Student versus /bin/mail**

**Linux Howtos**  
Accessing VMWare remotely via Linksys Router  
Fall 2008

**Assumptions**

- VMware server is installed and functioning on your home system.
- You have a home grade router that allows you to configure port forward
- You are able to determine the IP address of your home based system
- You are able to "hard code" and IP address on your VMware host system
- You are able to determine the IP address of your Virtual Machine

**How to Install Virtual Box**  
Marco Pallestrino

**I. Introduction**  
This How To will show the installation of the Virtual Box program that can be set up in Windows XP to run a second Operating System in a single computer. Additionally, Linux Operating Systems will be installed to demonstrate the use of the Virtual Box.

**II. What is VirtualBox?**  
Virtual Box is an Open Source software, is freely available, and performs as a Virtual Machine. It can be installed on the most popular operating systems such as Windows XP and Vista, Macintosh and Linux hosts, while additionally supporting a large number of guest operating systems such as Red Hat, Fedora, Ubuntu, OpenSuse, Open SUSE, Debian. You can even install Windows Vista or Windows XP Guest in a Linux Host without a dual boot environment ... just one key will switch from Host OS to Guest OS. This is a big advantage since you can have two operating systems in the same screen at the same time without restarting your machine!

<https://simms-teach.com/resources.php>

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Subscribe to the forum to get email notifications of new posts

After logging in:

1. Go to the CIS 90 class forum.
2. At the bottom of the page, click the "Subscribe forum" link on the lower left. When subscribed you get email notifications when new posts are made.
3. To unsubscribe, click it again.

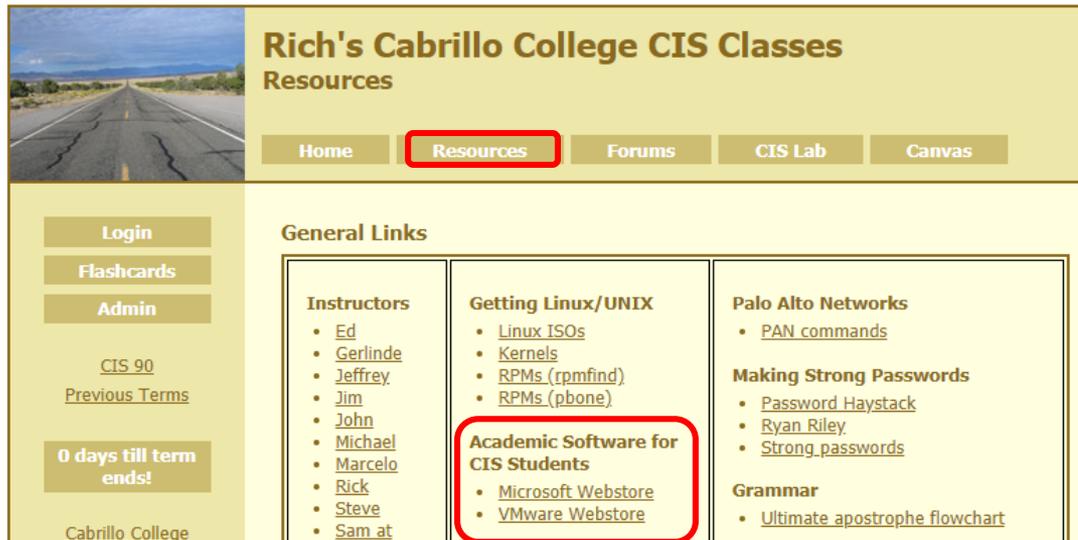
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<b>Instructors</b> <ul style="list-style-type: none"><li>• <a href="#">Ed</a></li><li>• <a href="#">Gerlinde</a></li><li>• <a href="#">Jeffrey</a></li><li>• <a href="#">Jim</a></li><li>• <a href="#">John</a></li><li>• <a href="#">Michael</a></li><li>• <a href="#">Marcelo</a></li><li>• <a href="#">Rick</a></li><li>• <a href="#">Steve</a></li><li>• <a href="#">Sam at</a></li></ul>	<b>Getting Linux/UNIX</b> <ul style="list-style-type: none"><li>• <a href="#">Linux ISOs</a></li><li>• <a href="#">Kernels</a></li><li>• <a href="#">RPMs (rpmfind)</a></li><li>• <a href="#">RPMs (pbone)</a></li></ul> <b>Academic Software for CIS Students</b> <ul style="list-style-type: none"><li>• <a href="#">Microsoft Webstore</a></li><li>• <a href="#">VMware Webstore</a></li></ul>	<b>Palo Alto Networks</b> <ul style="list-style-type: none"><li>• <a href="#">PAN commands</a></li></ul> <b>Making Strong Passwords</b> <ul style="list-style-type: none"><li>• <a href="#">Password Haystack</a></li><li>• <a href="#">Ryan Riley</a></li><li>• <a href="#">Strong passwords</a></li></ul> <b>Grammar</b> <ul style="list-style-type: none"><li>• <a href="#">Ultimate apostrophe flowchart</a></li></ul>
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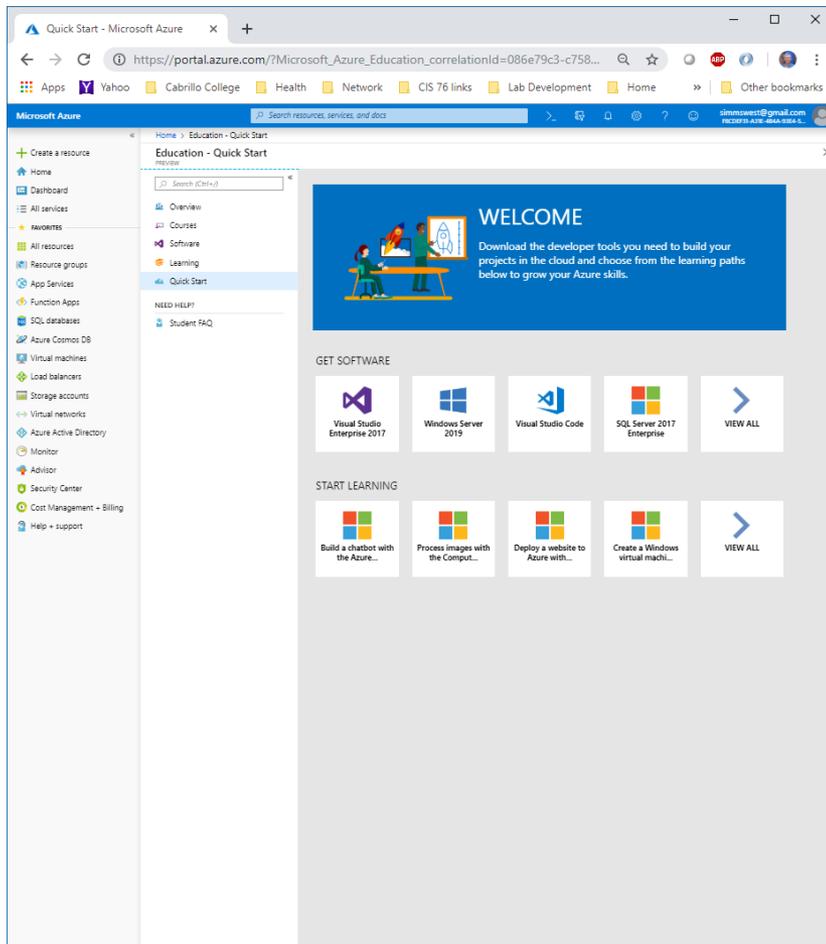


*How to obtain Microsoft and VMware software for academic use*



<https://simms-teach.com/resources.php>

# Microsoft Academic Webstore



Microsoft software for students registered in a CIS or CS class at Cabrillo.

Available after registration is final (two weeks after first class).

For convenience, links to the Academic webstores are on the Resource page of the website:

<https://simms-teach.com/resources.php>

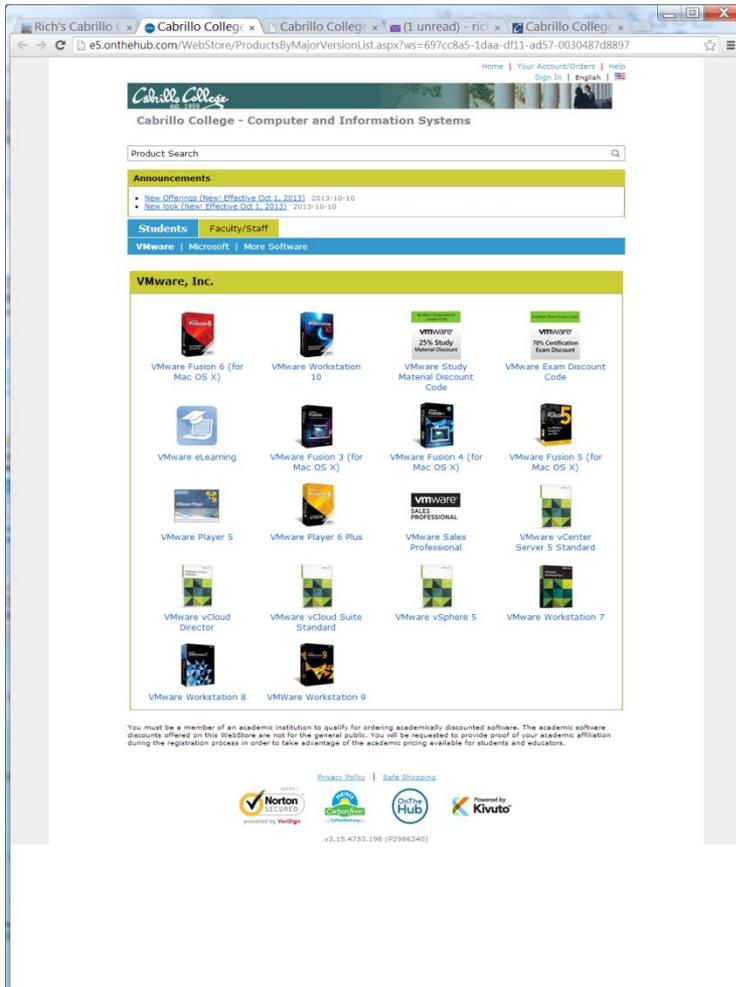
## Academic Software for CIS Students

- [Microsoft Webstore](#)
- [VMware Webstore](#)

**Licensed for educational use only.**

Happy downloading!

# VMware Academic Webstore



VMware software for students registered in a CIS or CS class at Cabrillo.

Available after registration is final (two weeks after first class).

For convenience, links to the Academic webstores are on the Resource page of the website:

<https://simms-teach.com/resources.php>

**Academic Software for CIS Students**

- [Microsoft Webstore](#)
- [VMware Webstore](#)

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Happy downloading!



# Course Expectations Check

## Expectation Check

Skills you should be comfortable performing

### Navigating <http://simms-teach.com>

- Enter the Virtual Classroom
- Watch video recordings of previous lessons
- Download and search lessons PDFs
- Review your graded work and monitor your current grade status
- Find out when any assignment is due
- Find when any quiz and test will be held
- Find the answers for graded labs and quizzes
- Read and make forum posts
- Obtain Microsoft and VMware products at no cost for academic use
- Locate your personal Arya system

### Navigating systems

- Log into Opus-II from home or school using SSH
- Log into Arya and other VMs from Opus-II using SSH
- Use Arya's graphical desktop via VLab
- Change Virtual (TTY) Terminals on your Arya

### Using the shell

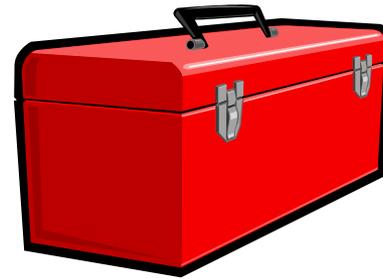
- Use any of the Lesson 1 and 2 commands
- Parse any shell command
- Get documentation on any command
- Identify the four key components of the UNIX/Linux architecture
- Identify the six steps the shell performs for every command
- Temporarily change your shell prompt
- Set and show values of shell variables like PATH, TERM and PS1

*If you have any questions on these skills, post a question on the forum or come see me in the CTC!*

## *Notes to Rich*



If there is enough time do some of the practice questions in the Backup section



# More commands for your toolbox



## Lesson 3 commands for your toolbox

**write**

- "chat" with another user by writing to their terminal

**mesg**

- enable/disable writes to your terminal

**irssi**

- Chat using IRC protocol

**mail**

- send and read email



# Write Command

# write command

Output text to another user's terminal device

## Syntax:

**write** *username [ttyname]*

- Use *ttyname* if there are multiple logins by the target username.
- The receiver sees:

```
Message from yourname@yourhost on yourtty at hh:mm ...
```
- Each line you enter is written to the other user's terminal.
- To end sending message type Ctrl-D (Hold down Ctrl and tap D key)
  - The receiver will see an EOF (end of file) at the end.
- If the receiver wants to reply then they must use the **write** command as well.
- Use **mesg n** (to block incoming messages).
- Use **mesg y** (to allow incoming messages).

## Use the write command to chat with another user



```

simben90@oslab:~
/home/cis90/simben $ write milhom90
What's up?

Message from milhom90@oslab.cishawks.net on pts/1 at 09:30 ...
Not much ... want to run around and bark for awhile?
Sure, meet you in the park in 5 mins
Ok
EOF
/home/cis90/simben $ ^C
/home/cis90/simben $
  
```

```

milhom90@oslab:~
Message from simben90@oslab.cishawks.net on pts/0 at 09:30 ...
What's up?
write simben90
Not much ... want to run around and bark for awhile?
Sure, meet you in the park in 5 mins
Ok
/home/cis90/milhom $ EOF
/home/cis90/milhom $
  
```

**write milhom90**

**What's up?**

**Sure, meet you in the park in 5 mins**

**<Ctrl-D>**

**write simben90**

**Not much ... want to run around and  
bark for awhile?**

**OK**

**<Ctrl-D>**

# write command

send a message to another user

## Where is the write command?

```
/home/cis90/simben $ type write  
write is /usr/bin/write
```

*Answer: It's in the /usr/bin directory*

## What kind of file is the write command?

```
/home/cis90/simben $ file /usr/bin/write  
/usr/bin/write: setgid ELF 32-bit LSB shared object, Intel  
80386, version 1 (SYSV), dynamically linked (uses shared  
libs), for GNU/Linux 2.6.18, stripped
```

*Answer: It's a binary executable*

*ELF = Executable and Linkable Format*

*LSB = Least Significant Bit type of bit order*

# write command

send a message to another user

```
/home/cis90/simben $ man write
```

```

WRITE (1)                                Linux Programmer's Manual          WRITE (1)
NAME
write - send a message to another user

SYNOPSIS
write user [ttyname]

DESCRIPTION
Write allows you to communicate with other users, by copying lines from your terminal to theirs.

When you run the write command, the user you are writing to gets a message of the form:

    Message from yourname@yourhost on yourtty at hh:mm
    ...

Any further lines you enter will be copied to the specified user's terminal. If the other user wants to reply, they must run write as well.

When you are done, type an end-of-file or interrupt character. The other user will see the message EOF indicating that the conversation is over.

You can prevent people (other than the super-user) from writing to you with the mesg(1) command. Some commands, for example nroff(1) and pr(1), may disallow writing automatically, so that your output isn't overwritten.

```

Use the **man** command to review how the write command works.

# Supplemental write example

# write command

simben90 writes to milhom90



*Benji, uses the **who** command to see the current users logged into Opus-II. He sees his friend Homer is logged in twice.*

```
/home/cis90/simben $ who
srelau98 pts/0      2012-09-11 06:36 (anice-34-27-241-136.wanadoo.fr)
simben90 pts/1      2012-09-11 06:47 (42-15-94-107.dsl.com)
alvdes98 pts/2      2012-09-11 07:49 (c-25-14-136-111.comcast.net)
milhom90 pts/3      2012-09-11 08:03 (42-15-94-107.dsl.com)
milhom90 pts/4      2012-09-11 08:09 (42-15-94-107.dsl.com)
```



*Homer, ever curious, uses the **tty** command to see what terminal device he is currently using*

```
/home/cis90/milhom $ tty
/dev/pts/4
/home/cis90/milhom $
```

# write command

simben90 writes to milhom90



```
/home/cis90/simben $ write milhom90  
write: milhom90 is logged in more than once; writing to pts/4
```

*1) Benji enters this*



```
/home/cis90/milhom $  
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...
```

*2) Homer sees this appear on his terminal*

# write command

simben90 writes to milhom90



```
/home/cis90/simben $ write milhom90  
write: milhom90 is logged in more than once; writing to pts/4  
What do you think of the new CentOS distro?
```

1) Benji enters this



```
/home/cis90/milhom $  
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...  
What do you think of the new CentOS distro?
```

2) Homer sees this appear on his terminal

# write command

simben90 writes to milhom90



```
/home/cis90/milhom $  
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...  
What do you think of the new CentOS distro?  
write simben90
```

*1) Homer enters this*



```
/home/cis90/simben $ write milhom90  
write: milhom90 is logged in more than once; writing to pts/4  
What do you think of the new CentOS distro?
```

```
Message from milhom90@oslab.cabrillo.edu on pts/4 at 09:55 ...
```

*2) and Benji sees this appear on his terminal*

# write command

simben90 writes to milhom90



```
/home/cis90/milhom $  
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...  
What do you think of the new CentOS distro?  
write simben90  
What's with the periods on the long listing permissions?
```

1) Homer enters this



```
/home/cis90/simben $ write milhom90  
write: milhom90 is logged in more than once; writing to pts/4  
What do you think of the new CentOS distro?
```

```
Message from milhom90@oslab.cabrillo.edu on pts/4 at 09:55 ...  
What's with the periods on the long listing permissions?
```

2) and Benji sees this appear on his terminal

# write command

## simben90 writes to milhom90



```
/home/cis90/simben $ write milhom90  
write: milhom90 is logged in more than once; writing to pts/4  
What do you think of the new CentOS distro?
```

```
Message from milhom90@oslab.cabrillo.edu on pts/4 at 09:55 ...  
What's with the periods on the long listing permissions?
```

```
I think it's SELinux
```

*1) Benji enters this*



```
/home/cis90/milhom $  
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...  
What do you think of the new CentOS distro?  
write simben90  
What's with the periods on the long listing permissions?  
I think it's SELinux
```

*2) Homer sees this appear on his terminal* 115

# write command

simben90 writes to milhom90



```
/home/cis90/milhom $  
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...  
What do you think of the new CentOS distro?  
write simben90  
What's with the periods on the long listing permissions?  
I think it's SELinux  
Talk to you later, I'm going to bark a little and take a nap
```

1) Homer enters this



```
/home/cis90/simben $ write milhom90  
write: milhom90 is logged in more than once; writing to pts/4  
What do you think of the new CentOS distro?  
  
Message from milhom90@oslab.cabrillo.edu on pts/4 at 09:55 ...  
What's with the periods on the long listing permissions?  
I think it's SELinux  
Talk to you later, I'm going to bark a little and take a nap
```

2) and Benji sees this appear on his terminal

# write command

## simben90 writes to milhom90



```
/home/cis90/milhom $  
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...  
What do you think of the new CentOS distro?  
write simben90  
What's with the periods on the long listing permissions?  
I think it's SELinux  
Talk to you later, I'm going to bark a little and take a nap  
Ctrl-D ← 1) Homer issues a Ctrl-D (holds down Ctrl  
key, then taps D key)  
/home/cis90/milhom $
```



```
/home/cis90/simben $ write milhom90  
write: milhom90 is logged in more than once; writing to pts/4  
What do you think of the new CentOS distro?  
  
Message from milhom90@oslab.cabrillo.edu on pts/4 at 09:55 ...  
What's with the periods on the long listing permissions?  
I think it's SELinux  
Talk to you later, I'm going to bark a little and take a nap  
EOF ← 2) and Benji sees this appear on his terminal
```

# write command

## simben90 writes to milhom90



```
/home/cis90/simben $ write milhom90
write: milhom90 is logged in more than once; writing to pts/4
What do you think of the new CentOS distro?
```

```
Message from milhom90@oslab.cabrillo.edu on pts/4 at 09:55 ...
What's with the periods on the long listing permissions?
I think it's SELinux
Talk to you later, I'm going to bark a little and take a nap
EOF
```

**bye** ← 1) *Benji enters this*

---



```
/home/cis90/milhom $
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...
What do you think of the new CentOS distro?
write simben90
What's with the periods on the long listing permissions?
I think it's SELinux
Talk to you later, I'm going to bark a little and take a nap
```

/home/cis90/milhom \$ **bye** ← 2) *Homer sees this written to his terminal*

# write command

## simben90 writes to milhom90



```
/home/cis90/simben $ write milhom90
write: milhom90 is logged in more than once; writing to pts/4
What do you think of the new CentOS distro?
```

```
Message from milhom90@oslab.cabrillo.edu on pts/4 at 09:55 ...
What's with the periods on the long listing permissions?
I think it's SELinux
Talk to you later, I'm going to bark a little and take a nap
EOF
bye
Ctrl-D
/home/cis90/simben $
```

*1) Benji issues a Ctrl-D (holds down Ctrl key, then taps D key)*



```
/home/cis90/milhom $
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...
What do you think of the new CentOS distro?
write simben90
What's with the periods on the long listing permissions?
I think it's SELinux
Talk to you later, I'm going to bark a little and take a nap
/home/cis90/milhom $ bye
```

EOF

*2) and Homer sees this appear on his terminal*

## Class Activity

*Students, login to Opus-II if you haven't already*

- Use the write command to "chat" with your pair mate.  
e.g. **write** *username*
- Ask your pair mate for their real first name and put that in the chat window.
- End the chat session with Ctrl-D

Note to Rich:

Run **pairs** alias (script in /home/rsimms/cis90/lab03/scripts directory)

# mesg command

**mesg y** enables and **mesg n** disables writes to your terminal



```
/home/cis90/milhom $ mesg n
```



*1) Homer disables writes to his terminal so he can take his nap*



```
/home/cis90/simben $ write milhom90  
write: milhom90 has messages disabled
```

*2) Benji discovers that Homer is no longer accepting messages*

# who command

The -T option shows who is writeable

*The -T option shows users messages status*

```
/home/cis90/simben $ who -T
srelau98 + pts/0          2012-09-11 06:36 (anice-34-27-241-136.wanadoo.fr)
simben90 + pts/1          2012-09-11 06:47 (42-15-94-107.dsl.com)
alvdes98 + pts/2          2012-09-11 07:49 (c-25-14-136-111.comcast.net)
milhom90 - pts/3          2012-09-11 08:03 (42-15-94-107.dsl.com)
milhom90 - pts/4          2012-09-11 08:09 (42-15-94-107.dsl.com)
```

*+ indicate writes to this user are enabled and - indicates writes to this user are blocked*

```
/home/cis90/simben $ ls -l /dev/pts*
total 0
crw--w----. 1 srelau98 tty 136, 0 Sep 11 08:15 0
crw--w----. 1 simben90 tty 136, 1 Sep 11 08:25 1
crw--w----. 1 alvdes98 tty 136, 2 Sep 11 08:25 2
crw-------. 1 milhom90 tty 136, 3 Sep 11 08:19 3
crw-------. 1 milhom90 tty 136, 4 Sep 11 08:19 4
c------. 1 root root 5, 2 Jul 30 21:25 ptmx
```

*We will learn about file wildcards and permissions later.*

*This is a just a preview showing that write permission is removed from /dev/pts/3 and /dev/pts/4 for the tty group.*



# IRC

# irssi

Chat with multiple users via IRC server

## Syntax:

### irssi

**/connect** *hostname*

*Connect to IRC server*

**/join** *#channel*

*Join channel*

**/part**

*Leave channel*

**/nick** *your-nickname*

*Set your display name*

**/names**

*See others in channel*

*message*

*Public chat message*

**/msg** *nickname message*

*Private chat message*

**alt 1**

*Main window*

**alt 2**

*Public chat window*

**alt 3**

*Private chat window*

**/disconnect**

*Disconnect from IRC server*

**/exit or /quit**

*Exit irrsi*

## Follow me

### Students, login to Opus-II if you haven't already

`irssi` *(start the IRC chat client)*  
`/connect eh-irc` *(connect to the IRC server)*  
`/join #cis90` *(join the CIS 90 channel)*  
`/nick Benji` *(specify your name to be seen by others)*  
`Hello world` *(send message to everyone)*  
`/names` *(see who else on the channel)*  
`/msg Homer Hey Homer` *(send private message to Homer)*

 **1** *(“server” window, Mac users use **Esc+1**)*  
 **2** *(“everyone” window, Mac users use **Esc+2**)*  
 **3** *(“private” window, Mac users use **Esc+3**)*

`/exit` or `/quit`

# irssi

## Supplemental Reading

[an error occurred while processing this directive] [an error occurred while processing this directive]

### IRC Information....

#### IRC Class - Basic IRC Commands

- IRC - Internet Relay Chat
- Helpful Tips
- Basic IRC Commands
- mIRC Setup Tutorial
- PIRC Setup Tutorial

Just as you are able to surf the net with a few tricks to help make things easier, IRC is very similar. Below you will find some of the more common IRC commands that we use often. For a far more complete list, please visit our [mIRC Commands](#) page.

**/join**  
Type `join #channelname` -- to join a channel of your choice  
Example: `join #bossmom`  
What it looks like:  
[18:44] \*\*\* Now talking in #beginner  
--Op-- bossmom has joined the channel  
[18:44] \*\*\* Topic is 'Beginner's Help/Chat Channel...All Are Welcome Here!!' @C [ENGLISH]  
[18:44] \*\*\* Set by X on Sun Jul 23 16:10:34

**/me**  
The `/me` is an action message.  
Type `me` does anything  
Example: `me waves hello`  
What it looks like:  
\* bossmom waves hello

**/msg**  
Type `msg nickname (message)` to start a private chat.  
Example: `msg puddytat Hey tat, how are you?`  
What it looks like:  
-> \*puddytat\* Hey tat, how are you?

**/nick**  
`/nick` changes your nickname  
Example: type `nick newnickname` (limit 9 characters)  
What it looks like: I typed `nick Juv2quilt`  
\*\*\* bossmom is now known as Juv2quilt

**/notice**  
A notice is used to send a short message to another person without opening up a private window.  
Type `notice nickname (message)`  
Example: `notice badnick Please change your nickname for this family channel.`

<http://www.ircbeginner.com/ircinfo/ircc-commands.html>

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## Using Irssi for Internet Relay Chat

Updated Friday, January 9, 2015 by Elle Krout Written by Alex Fornuto

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[Contribute on GitHub](#) [Report an Issue](#) [View File](#) [Edit File](#)

### In This Guide:

- Prerequisites
- Installing Irssi
- Starting Irssi
- Configuring Irssi
  - Joining IRC Networks
  - Joining Channels
  - Configuring Default Nickname (Nick)
  - Managing IRC Nicknames
  - Sending Messages
  - Basic Window Navigation
  - Managing and Manipulating Windows
  - Adding Default

**Irssi** is a terminal-based chat client for real-time conversations over Internet Relay Chat (**IRC**). IRC is the common meeting ground for Linode users to exchange knowledge and troubleshoot issues in our public channel, **#linode on OFTC**.

Irssi can run on Linux or MAC OS X, either from your local workstation or your Linode. If you are unfamiliar with using a Linux terminal, you may want to review the Linode guides [Using the Terminal](#) and [Introduction to Linux Concepts](#). Additionally, it is assumed that you have followed our [Getting Started Guide](#) if you intend to run Irssi on your Linode.

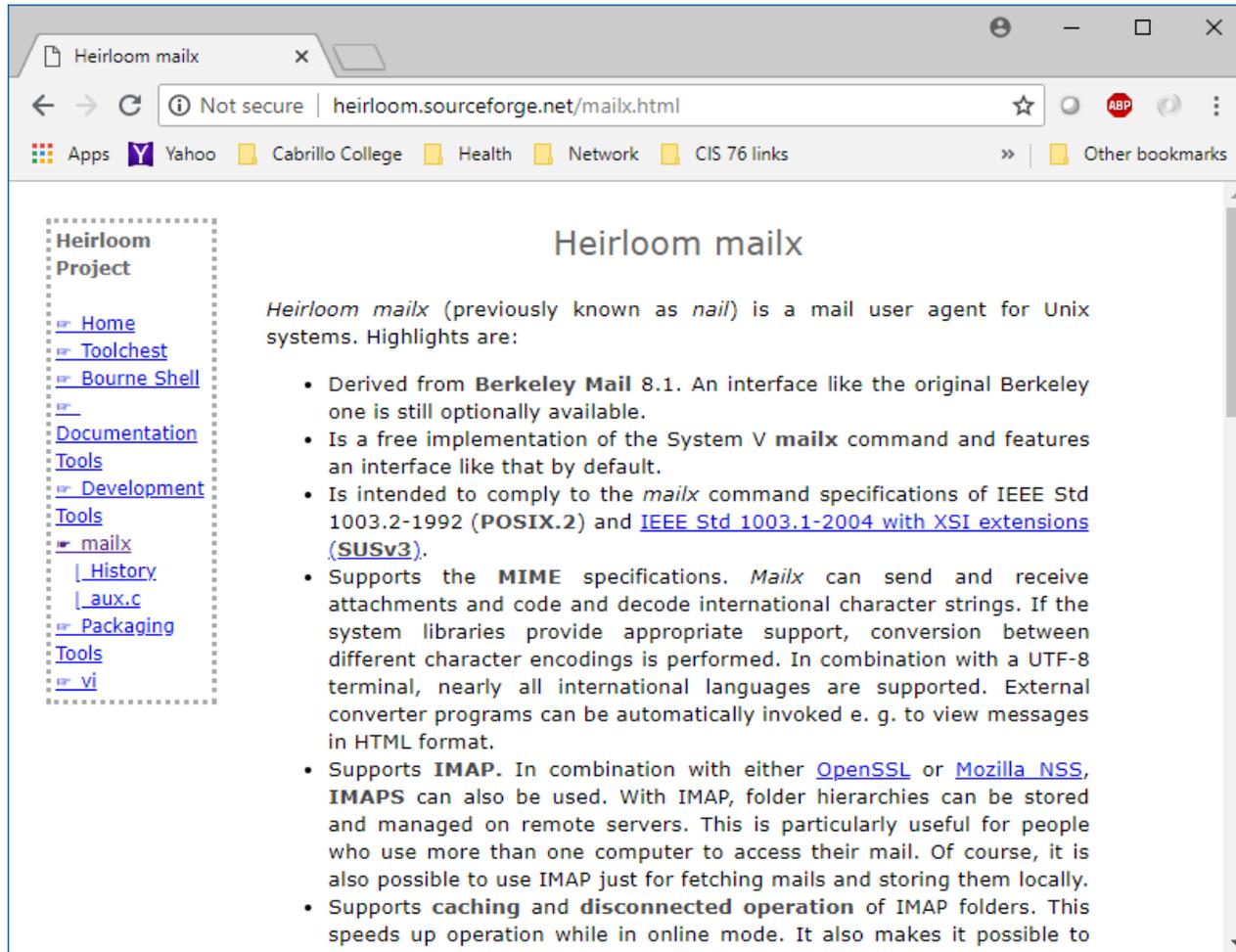
<https://linode.com/docs/applications/messaging/using-irssi-for-internet-relay-chat/>



# Basic Mail

The mailx program

# Heirloom mailx - email via the command line



*We will be using the Heirloom Mailx program for a command-line version of email.*

<http://heirloom.sourceforge.net/mailx.html>

# UNIX mail

The mail command is a program, named mailx

```
/home/cis90/simben $ type mail  
mail is hashed (/usr/bin/mail)
```

*The mail program is on the path and in the /usr/bin directory.*

```
/home/cis90/simben $ file /usr/bin/mail  
/usr/bin/mail: symbolic link to `mailx'
```

*It is a "symbolic link" (we learn about these later) to the mailx program.*

```
/home/cis90/simben $ type mailx  
mailx is /usr/bin/mailx
```

*The mailx program file is also in the /usr/bin directory.*

```
/home/cis90/simben $ file /usr/bin/mailx  
/usr/bin/mailx: ELF 64-bit LSB executable,  
x86-64, version 1 (SYSV), dynamically  
linked (uses shared libs), for GNU/Linux  
2.6.32,  
BuildID[sha1]=4899690244325ef32788582556f6c  
afad6ee9ea9, stripped
```

*The mailx program is a binary executable.*

## *Notes to Rich*



[ ] - Verify new cis90-students alias has been created

```
grep cis90 /etc/aliases
```

# UNIX mail

## Sending messages

*As an example, Benji sends an email to Homer (a user on Opus-II) and Rich (using his Yahoo email address)*

**Homer**  
(milhom90)



**Rich**  
(richsimms@yahoo.com)



**Benji**  
(simben90)

```
/home/cis90/simben $ mail milhom90 richsimms@yahoo.com
Subject: Where is the old bone
I can't find my old bone. Let me know if you see it.
Thanks,
Benji
.
EOT
/home/cis90/simben $
```

*Use Ctrl-D or a single period to end the message (End Of Text)*

*Recipients can be Opus-II users (just specify their username) or regular email addresses.*

# UNIX Mail

## Reading messages



**Homer**  
(milhom90)

```
/home/cis90/milhom $
```

```
You have new mail in /var/spool/mail/milhom90
```

*Homer notices he has received new mail and runs the mail command to see what has arrived*

```
/home/cis90/milhom $ mail
```

```
Heirloom Mail version 12.4 7/29/08. Type ? for help.
```

```
"/var/spool/mail/milhom90": 1 message 1 new
```

```
>N 1 Benji Simms Tue Sep 11 12:59 22/830
```

"Where is the old bone"

```
& 1
```

*He types 1 to read message 1*

```
Message 1:
```

```
From simben90@oslab.cabrillo.edu Tue Sep 11 12:59:27 2012
```

```
Return-Path: <simben90@oslab.cabrillo.edu>
```

```
From: Benji Simms <simben90@oslab.cabrillo.edu>
```

```
Date: Tue, 11 Sep 2012 12:59:27 -0700
```

```
To: richsimms@yahoo.com, milhom90@oslab.cabrillo.edu
```

```
Subject: Where is the old bone
```

```
User-Agent: Heirloom mailx 12.4 7/29/08
```

```
Content-Type: text/plain; charset=us-ascii
```

```
Status: R
```

*message headers*

```
I can't find my old bone. Let me know if you see it.
```

```
Thanks,
```

```
Benji
```

*message body*

*The N signifies a new message*

*The & is the mail prompt*

# UNIX mail

## Reading messages sent from UNIX mail



**Rich**  
(richsimms@yahoo.com)

The screenshot shows a web browser window displaying the Yahoo! Mail interface. The address bar shows the URL `us.mg6.mail.yahoo.com/neo/launch?.rand=cgngjcotde4d7`. The page header includes the user's name "Hi, Richard" and a search bar. The main navigation bar shows "WHAT'S NEW", "INBOX (8402)", and "CONTACTS". Below this is a toolbar with buttons for "Compose Message", "Delete", "Reply", "Forward", "Spam", and "Settings".

The email list shows the following entries:

FROM	SUBJECT	DATE
Benji Simms	Where is the old bone	1:02 PM
Microsoft Security	Smartphones: Important safety information	12:53 PM
ECT News Network	Holiday Readiness Handbook 2012 - 300 Compa...	10:54 AM
Steve Hodges	Re: Dept Meeting, 9/21-Reschedule	10:01 AM
James Griffin	Re: Dept Meeting, 9/21-Reschedule	9:29 AM
Rick Graziani	Re: Dept Meeting, 9/21-Reschedule	9:04 AM

The selected email from Benji Simms has the following details:

**Where is the old bone**  
 FROM: Benji Simms  
 TO: richsimms@yahoo.com, milhom90@oslab.cabrillo.edu  
 Tuesday, September 11, 2012 1:02 PM

The body of the email contains the text: "I can't find my old bone. Let me know if you see it. Thanks, Benji".

*Rich reads the email from Benji using Yahoo mail (a mail user agent)*

# Sending Mail

# UNIX mail

## Sending messages using the mail command

**mail** *recipient1 recipient2 ... recipientN*

The mail command can be used to send an email to one or more recipients. Each argument designates a recipient specified by a username (in /etc/passwd), a normal email address, or an alias (in /etc/aliases).

### Examples:

**mail rsimms**      *username as argument*

**mail simben90 prites90 mcgmon90**      *multiple usernames as arguments*

**mail risimms@cabrillo.edu feredu90**      *regular email address and username as arguments*

**mail \$LOGNAME**      *your username, specified using a variable, as argument*

**mail cis90-students**      *an alias (used as a distribution list)  
for all CIS 90 students*

## Sending an email from the command line

```
1) /home/cis90/simben $ mail simben90 rsimms
2) Subject: Welcome
3) This mail program is pretty crazy!
4) .
   /home/cis90/simben $
```

- 1) *Specify one or more recipients as arguments to the mail command.*
- 2) *When prompted, enter a subject for the message.*
- 3) *Then start typing (there is no prompt) the body of the message. Continue typing and entering each line till finished. Note you can't edit a line after you enter it!*
- 4) *Enter a . in column 1 to end the message and send it.*

## Activity

- Login to Opus-II
- Send a message to Benji and me:

```
/home/cis90/simben $ mail simben90 rsimms  
Subject: Welcome  
This mail program is pretty crazy!  
.  
/home/cis90/simben $
```

*Write "it works" or "having trouble" in the chat window.*

## Activity

- Send a message to yourself using the LOGNAME variable (which contains your username):

```
/home/cis90/simben $ mail $LOGNAME  
Subject: Velkominn  
This mail program is pretty crazy!  
.  
/home/cis90/simben $
```

*Write "it works" or "having trouble" in the chat window.*

## Activity

- Send a message to yourself and your regular email address:

*Replace with your  
Opus-II username*

```
/home/cis90/simben $ mail xxxxxx90 xxxxxx@xxxxx.com  
Subject: Bienvenido  
This mail program is pretty crazy!  
.  
/home/cis90/simben $
```

*Replace with  
your regular  
email address*

*Write "it works" or "having trouble" in the chat window.*

## Activity

- Send a message to the whole class using the cis90-students alias (a distribution list):

```
/home/cis90/simben $ mail cis90-students  
Subject: Tervetuloa  
This mail program is pretty crazy!  
.  
/home/cis90/simben $
```

*Write "it works" or "having trouble" in the chat window.*

## Notes to Rich



[ ] - Send out Welcome letter

use **welcome** alias or

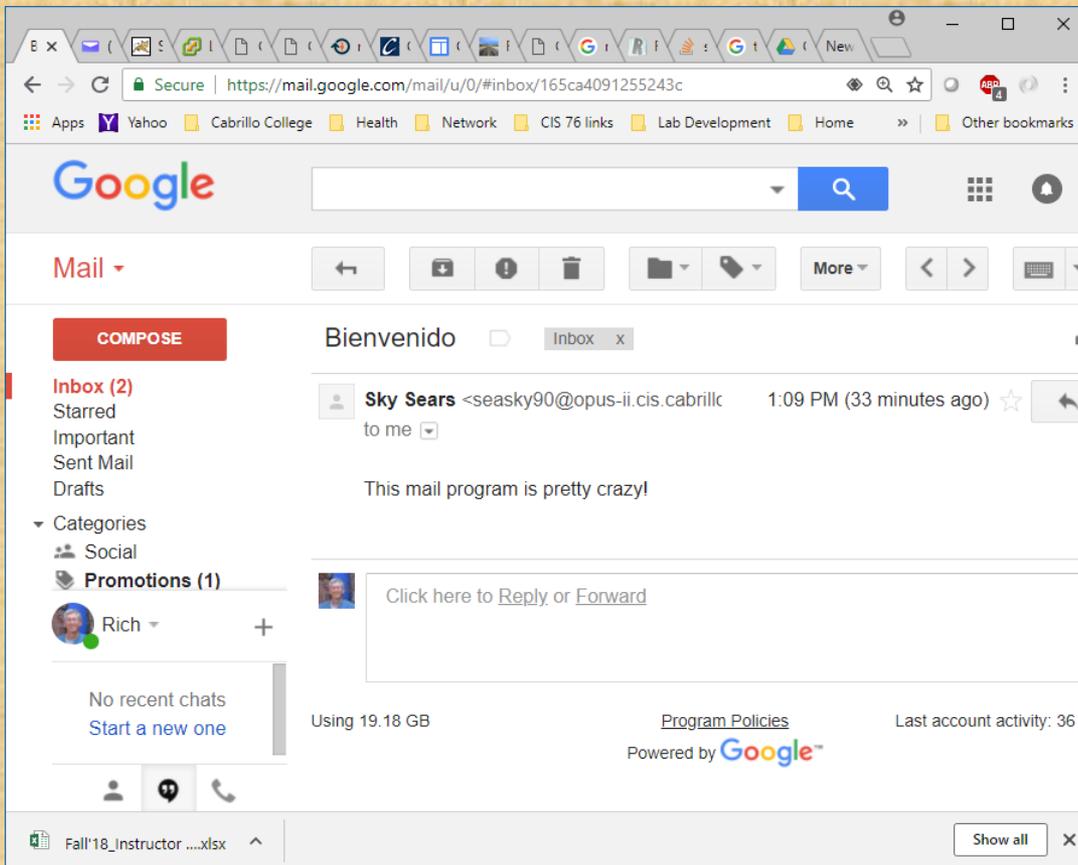
**~rsimms/cis90/lab03/scripts/uhist/mail-welcome**

# Reading Mail

# Activity



**Rich**  
(richsimms@cabrillo.edu)



Check your regular mail and see if you got any messages from yourself.

*Write "it works" or "having trouble" in the chat window.*

# UNIX mail

## Reading messages

### Syntax:

### mail

*To read mail, enter the mail command with no arguments. The mail command has its own mini-shell with its own set of mail oriented commands.*

## Activity

### mail

```

/home/cis90/seasky $
You have new mail in /var/spool/mail/seasky90
/home/cis90/seasky $ mail
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/spool/mail/seasky90": 4 messages 4 new
>N  1 Sky Sears      Tue Sep 11 13:08  18/687  "Velkiminn"
   N  2 Sky Sears      Tue Sep 11 13:09  19/711  "Bienvenido"
   N  3 Sky Sears      Tue Sep 11 13:10  18/721  "Tervetuloa"
   N  4 Rich Simms    Tue Sep 11 13:10  30/938  "Welcome"
&

```

You will get a notification "You have new mail ..." when new mail arrives.

To read your mail enter: **mail**

You will then see a list of messages in your "in-tray". Your "in-tray" is actually a regular file whose pathname is `/var/spool/mail/$LOGNAME`. The "N" indicates a new unread message.

*Write "it works" or "having trouble" in the chat window.*

## Activity

2

```
& 2
Message 2:
From seasky90@opus-ii.cis.cabrillo.edu Tue Sep 11 13:09:13 2018
Return-Path: <seasky90@opus-ii.cis.cabrillo.edu>
X-Original-To: seasky90
Delivered-To: seasky90@opus-ii.cis.cabrillo.edu
Date: Tue, 11 Sep 2018 13:09:13 -0700
To: risimms@cabrillo.edu, seasky90@opus-ii.cis.cabrillo.edu
Subject: Bienvenido
User-Agent: Heirloom mailx 12.5 7/5/10
Content-Type: text/plain; charset=us-ascii
From: seasky90@opus-ii.cis.cabrillo.edu (Sky Sears)
Status: R

This mail program is pretty crazy!
--More--
```

Enter 2 to arbitrarily read the second message.

If you see "--More--" then use the Space Bar to continue reading through the message.

*Write "it works" or "having trouble" in the chat window.*

## Activity

[Space Bar]

```
Message 2:  
From seasky90@opus-ii.cis.cabrillo.edu Tue Sep 11 13:09:13 2018  
Return-Path: <seasky90@opus-ii.cis.cabrillo.edu>  
X-Original-To: seasky90  
Delivered-To: seasky90@opus-ii.cis.cabrillo.edu  
Date: Tue, 11 Sep 2018 13:09:13 -0700  
To: risimms@cabrillo.edu, seasky90@opus-ii.cis.cabrillo.edu  
Subject: Bienvenido  
User-Agent: Heirloom mailx 12.5 7/5/10  
Content-Type: text/plain; charset=us-ascii  
From: seasky90@opus-ii.cis.cabrillo.edu (Sky Sears)  
Status: R
```

This mail program is pretty crazy!

&

For long messages you may need to hit the Space Bar several times.

*Write "it works" or "having trouble" in the chat window.*

## Activity

[Enter Key]

```
&
Message 3:
From seasky90@opus-ii.cis.cabrillo.edu Tue Sep 11 13:10:05 2018
Return-Path: <seasky90@opus-ii.cis.cabrillo.edu>
X-Original-To: cis90-test-students
Delivered-To: cis90-test-students@opus-ii.cis.cabrillo.edu
Date: Tue, 11 Sep 2018 13:10:04 -0700
To: cis90-test-students@opus-ii.cis.cabrillo.edu
Subject: Tervetuloa
User-Agent: Heirloom mailx 12.5 7/5/10
Content-Type: text/plain; charset=us-ascii
From: seasky90@opus-ii.cis.cabrillo.edu (Sky Sears)
Status: R

This mail program is pretty crazy!
```

Hit the Enter Key to read the next unread message. If you see "--More--" then use the Space Bar to continue reading through the message.

*Write "it works" or "having trouble" in the chat window.*

## Activity

[Enter Key]

```
&
Message 4:
From rsimms@opus-ii.cis.cabrillo.edu Tue Sep 11 13:10:37 2018
Return-Path: <rsimms@opus-ii.cis.cabrillo.edu>
X-Original-To: seasky90
Delivered-To: seasky90@opus-ii.cis.cabrillo.edu
Date: Tue, 11 Sep 2018 13:10:37 -0700
To: seasky90@opus-ii.cis.cabrillo.edu
Subject: Welcome
User-Agent: Heirloom mailx 12.5 7/5/10
Content-Type: text/plain; charset=us-ascii
From: rsimms@opus-ii.cis.cabrillo.edu (Rich Simms)
Status: R

Hello Sky,

Welcome to CIS 90!

Your account is on the Opus-II server which is running the
CentOS 7 distribution of Linux.

The external hostname for Opus-II is opus-ii.cis.cabrillo.edu which
will resolve to 207.62.187.230 outside of the campus.

Enjoy learning about Linux and UNIX.

- Rich
```

Hit the Enter key to read the next unread message. If you see "--More--" then use the Space Bar to continue reading through the message.

*Write "it works" or "having trouble" in the chat window.*

## Activity

**h**

```
The external hostname for Opus-II is opus-ii.cis.cabrillo.edu which
will resolve to 207.62.187.230 outside of the campus.
```

```
Enjoy learning about Linux and UNIX.
```

```
- Rich
```

```
&
At EOF
& h
N 1 Sky Sears      Tue Sep 11 13:08 18/687 "Velkiminn"
  2 Sky Sears      Tue Sep 11 13:09 19/711 "Bienvenido"
  3 Sky Sears      Tue Sep 11 13:10 18/721 "Tervetuloa"
> 4 Rich Simms    Tue Sep 11 13:10 30/938 "Welcome"
&
```

Enter **h** or **headers** to list the messages. The information listed comes from the mail headers associated with each message. "N" means new message, "A" means answered, U means unread, \* means saved, and " " (blank) means the message has been read.

If you have more messages than can fit in the window use the **z** and **z-** commands to zoom (scroll) forward and back.

*Write "it works" or "having trouble" in the chat window.*

## Activity

1

& 1

Message 1:

From seasky90@opus-ii.cis.cabrillo.edu Tue Sep 11 13:08:18 2018

Return-Path: <seasky90@opus-ii.cis.cabrillo.edu>

X-Original-To: seasky90

Delivered-To: seasky90@opus-ii.cis.cabrillo.edu

Date: Tue, 11 Sep 2018 13:08:18 -0700

To: seasky90@opus-ii.cis.cabrillo.edu

Subject: Velkiminn

User-Agent: Heirloom mailx 12.5 7/5/10

Content-Type: text/plain; charset=us-ascii

From: seasky90@opus-ii.cis.cabrillo.edu (Sky Sears)

Status: R

This mail program is pretty crazy!

& █

Enter 1 to read the first message. If you see "--More--" then use the Space Bar to continue reading through the message.

*Write "it works" or "having trouble" in the chat window.*

## Activity

`quit`

```
& quit  
Held 4 messages in /var/spool/mail/seasky90  
You have mail in /var/spool/mail/seasky90  
/home/cis90/seasky $ █
```

Use **exit** or **quit** to leave mail. **quit** will exit and any deleted messages will be permanently removed. **exit** will exit without actually removing any deleted messages.

the **exit** command can be abbreviated a **x** and the **quit** command can be abbreviated as **q**.

*Write "it works" or "having trouble" in the chat window.*

# Managing Mail



# UNIX mail

**mail**

```

/home/cis90/seasky $ mail
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/spool/mail/seasky90": 20 messages 16 new
  1 Sky Sears      Tue Sep 11 13:08  19/698  "Velkiminn"
  2 Sky Sears      Tue Sep 11 13:09  20/722  "Bienvenido"
  3 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
  4 Rich Simms     Tue Sep 11 13:10  31/949  "Welcome"
>N  5 Sky Sears     Tue Sep 11 14:09  31/1247 "sonnet35"
  N  6 Sky Sears     Tue Sep 11 14:09  26/872  "forget"
  N  7 Sky Sears     Tue Sep 11 14:09  45/1506 "mooncat"
  N  8 Sky Sears     Tue Sep 11 14:09  27/881  "ant"
  N  9 Sky Sears     Tue Sep 11 14:09  31/1270 "sonnet5"
  N 10 Sky Sears     Tue Sep 11 14:09  27/881  "ant"
  N 11 Sky Sears     Tue Sep 11 14:09  31/1252 "sonnet26"
  N 12 Sky Sears     Tue Sep 11 14:09  35/1305 "twilight"
  N 13 Sky Sears     Tue Sep 11 14:09  45/1508 "mooncat"
  N 14 Sky Sears     Tue Sep 11 14:09  99/2088 "artichoke"
  N 15 Sky Sears     Tue Sep 11 14:09  27/883  "ant"
  N 16 Sky Sears     Tue Sep 11 14:09  70/2488 "dog"
  N 17 Sky Sears     Tue Sep 11 14:09  31/1281 "sonnet2"
  N 18 Sky Sears     Tue Sep 11 14:09  31/1238 "sonnet4"
  N 19 Sky Sears     Tue Sep 11 14:09  29/882  "you"
&

```

Enter the **mail** command and you should see a bunch of new messages from yourself.

*Write "it works" or "having trouble" in the chat window.*

# UNIX mail

**s 1-3 trash**

```

1 Sky Sears Tue Sep 11 13:08 19/698 "Velkiminn"
2 Sky Sears Tue Sep 11 13:09 20/722 "Bienvenido"
3 Sky Sears Tue Sep 11 13:10 19/732 "Tervetuloa"
4 Rich Simms Tue Sep 11 13:10 31/949 "Welcome"
> 5 Sky Sears Tue Sep 11 14:09 31/1247 "sonnet35"
N 6 Sky Sears Tue Sep 11 14:09 26/872 "forget"
N 7 Sky Sears Tue Sep 11 14:09 45/1506 "mooncat"
N 8 Sky Sears Tue Sep 11 14:09 27/881 "ant"
N 9 Sky Sears Tue Sep 11 14:09 31/1270 "sonnet5"
N 10 Sky Sears Tue Sep 11 14:09 27/881 "ant"
N 11 Sky Sears Tue Sep 11 14:09 31/1252 "sonnet26"
N 12 Sky Sears Tue Sep 11 14:09 35/1305 "twilight"
N 13 Sky Sears Tue Sep 11 14:09 45/1508 "mooncat"
N 14 Sky Sears Tue Sep 11 14:09 99/2088 "artichoke"
N 15 Sky Sears Tue Sep 11 14:09 27/883 "ant"
N 16 Sky Sears Tue Sep 11 14:09 70/2488 "dog"
N 17 Sky Sears Tue Sep 11 14:09 31/1281 "sonnet2"
N 18 Sky Sears Tue Sep 11 14:09 31/1238 "sonnet4"
N 19 Sky Sears Tue Sep 11 14:09 29/882 "you"
N 20 Sky Sears Tue Sep 11 14:09 31/1252 "sonnet26"
& s 1-3 trash
"trash" [New file] 61/2185
&

```

Using the **s** command, save the initial three welcome messages in a folder named trash.

*Write "it works" or "having trouble" in the chat window.*

# UNIX mail

[Enter Key]

```
&
Message 20:
From seasky90@opus-ii.cis.cabrillo.edu Tue Sep 11 14:09:14 2018
Return-Path: <seasky90@opus-ii.cis.cabrillo.edu>
X-Original-To: seasky90
Delivered-To: seasky90@opus-ii.cis.cabrillo.edu
Date: Tue, 11 Sep 2018 14:09:14 -0700
To: seasky90@opus-ii.cis.cabrillo.edu
Subject: sonnet26
User-Agent: Heirloom mailx 12.5 7/5/10
Content-Type: text/plain; charset=us-ascii
From: seasky90@opus-ii.cis.cabrillo.edu (Sky Sears)
Status: R

Lord of my love, to whom in vassalage
Thy merit hath my duty strongly knit,
To thee I send this written ambassage
To witness duty, not to show my wit;
Duty so great, which wit so poor as mine
May make seem bare, in wanting words to show it,
But that I hope some good conceit of thine
In thy soul's thought (all naked) will bestow it;
Till whatsoever star that guides my moving
Points on me graciously with fair aspect,
And puts apparel on my tottered loving,
To show me worthy of thy sweet respect:
    Then may I dare to boast how I do love thee,
    Till then, not show my head where thou mayst prove me.

&
```

Read all the new messages by repeatedly pressing the [Enter Key] and [Space Bar] as needed. When you get the end you will get "At EOF" (End of File).

*Write "it works" or "having trouble" in the chat window.*

# UNIX mail

**h**

```
& h
* 1 Sky Sears      Tue Sep 11 13:08  19/698  "Velkiminn"
* 2 Sky Sears      Tue Sep 11 13:09  20/722  "Bienvenido"
* 3 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
 4 Rich Simms     Tue Sep 11 13:10  31/949  "Welcome"
 5 Sky Sears      Tue Sep 11 14:09  31/1247 "sonnet35"
 6 Sky Sears      Tue Sep 11 14:09  26/872  "forget"
 7 Sky Sears      Tue Sep 11 14:09  45/1506 "mooncat"
 8 Sky Sears      Tue Sep 11 14:09  27/881  "ant"
 9 Sky Sears      Tue Sep 11 14:09  31/1270 "sonnet5"
10 Sky Sears      Tue Sep 11 14:09  27/881  "ant"
11 Sky Sears      Tue Sep 11 14:09  31/1252 "sonnet26"
12 Sky Sears      Tue Sep 11 14:09  35/1305 "twilight"
13 Sky Sears      Tue Sep 11 14:09  45/1508 "mooncat"
14 Sky Sears      Tue Sep 11 14:09  99/2088 "artichoke"
15 Sky Sears      Tue Sep 11 14:09  27/883  "ant"
16 Sky Sears      Tue Sep 11 14:09  70/2488 "dog"
17 Sky Sears      Tue Sep 11 14:09  31/1281 "sonnet2"
18 Sky Sears      Tue Sep 11 14:09  31/1238 "sonnet4"
19 Sky Sears      Tue Sep 11 14:09  29/882  "you"
> 20 Sky Sears     Tue Sep 11 14:09  31/1252 "sonnet26"
&
```

Use the **h** command to list messages in your "in-tray". It will display header information for each message. Note the "\*" means the message has been saved to another folder, blanks mean the message has been read and ">" indicates the current message read.

*Write "it works" or "having trouble" in the chat window.*

# UNIX mail

**R 4**

**Thanks! - Sky**

.

```
& R 4
To: rsimms@opus-ii.cis.cabrillo.edu
Subject: Re: Welcome

rsimms@opus-ii.cis.cabrillo.edu (Rich Simms) wrote:

> Hello Sky,
>
> Welcome to CIS 90!
>
> Your account is on the Opus-II server which is running the
> CentOS 7 distribution of Linux.
>
> The external hostname for Opus-II is opus-ii.cis.cabrillo.edu which
> will resolve to 207.62.187.230 outside of the campus.
>
> Enjoy learning about Linux and UNIX.
>
> - Rich

Thanks! - Sky
.
EOT
& █
```

Enter the **R 4** command to reply to the 4th message. Note that little **r** is used to reply-to-all and capital **R** is used to reply-to-sender only. Don't forget to end the message with a single **.** in column one.

*Write "done" in the chat window when done.*

# UNIX mail

d 5-20

```
& h
* 1 Sky Sears      Tue Sep 11 13:08 19/698  "Velkiminn"
* 2 Sky Sears      Tue Sep 11 13:09 20/722  "Bienvenido"
* 3 Sky Sears      Tue Sep 11 13:10 19/732  "Tervetuloa"
>A 4 Rich Simms    Tue Sep 11 13:10 31/949  "Welcome"
    5 Sky Sears     Tue Sep 11 14:09 31/1247 "sonnet35"
    6 Sky Sears     Tue Sep 11 14:09 26/872  "forget"
    7 Sky Sears     Tue Sep 11 14:09 45/1506 "mooncat"
    8 Sky Sears     Tue Sep 11 14:09 27/881  "ant"
    9 Sky Sears     Tue Sep 11 14:09 31/1270 "sonnet5"
   10 Sky Sears     Tue Sep 11 14:09 27/881  "ant"
   11 Sky Sears     Tue Sep 11 14:09 31/1252 "sonnet26"
   12 Sky Sears     Tue Sep 11 14:09 35/1305 "twilight"
   13 Sky Sears     Tue Sep 11 14:09 45/1508 "mooncat"
   14 Sky Sears     Tue Sep 11 14:09 99/2088 "artichoke"
   15 Sky Sears     Tue Sep 11 14:09 27/883  "ant"
   16 Sky Sears     Tue Sep 11 14:09 70/2488 "dog"
   17 Sky Sears     Tue Sep 11 14:09 31/1281 "sonnet2"
   18 Sky Sears     Tue Sep 11 14:09 31/1238 "sonnet4"
   19 Sky Sears     Tue Sep 11 14:09 29/882  "you"
   20 Sky Sears     Tue Sep 11 14:09 31/1252 "sonnet26"
& d 5-20
&
```

Delete the poem messages with the **d** command. If you delete the wrong message use the **u** command to undelete it.

*Write "it works" or "having trouble" in the chat window.*

# UNIX mail

**help**

```
& help
      mail commands
type <message list>      type messages
next                    goto and type next message
from <message list>     give head lines of messages
headers                print out active message headers
delete <message list>   delete messages
undelete <message list> undelete messages
save <message list> folder append messages to folder and mark as saved
copy <message list> folder append messages to folder without marking them
write <message list> file  append message texts to file, save attachments
preserve <message list>  keep incoming messages in mailbox even if saved
Reply <message list>     reply to message senders
reply <message list>     reply to message senders and all recipients
mail addresses          mail to specific recipients
file folder             change to another folder
quit                    quit and apply changes to folder
xit                     quit and discard changes made to folder
!                       shell escape
cd <directory>         chdir to directory or home if none given
list                    list names of all available commands

A <message list> consists of integers, ranges of same, or other criteria
separated by spaces.  If omitted, mail uses the last message typed.
&
```

Use the **help** command to see several common mail commands.  
To see all commands **quit** back the shell and use **man mail**.

*Write "it works" or "having trouble" in the chat window.*

# UNIX mail

**quit**  
**ls**

```
& q
Held 1 message in /var/spool/mail/seasky90
/home/cis90/seasky $ ls
bigfile  lab01-collection  letter          Poems          small_town  timecal
bin      lab01.graded      log             proposal1      spellk       trash
empty   Lab2.0            Miscellaneous   proposal2      text.err    what_am_i
Hidden  Lab2.1            mission        proposal3      text.fxd
/home/cis90/seasky $
```



Use **quit** to finish. Use **ls** to see the new trash folder which is actually just a single file.

*Write "it works" or "having trouble" in the chat window.*

# Mailbox Folders

# UNIX mail

The mail folders are ascii text files

## cat trash

```
seasky90@opus-ii:~$ cat trash
/home/cis90/seasky $ cat trash
From seasky90@opus-ii.cis.cabrillo.edu Tue Sep 11 13:08:18 2018
Return-Path: <seasky90@opus-ii.cis.cabrillo.edu>
X-Original-To: seasky90
Delivered-To: seasky90@opus-ii.cis.cabrillo.edu
Received: by opus-ii.cis.cabrillo.edu (Postfix, from userid 1252)
        id 3AF9B6B1F8; Tue, 11 Sep 2018 13:08:18 -0700 (PDT)
Date: Tue, 11 Sep 2018 13:08:18 -0700
To: seasky90@opus-ii.cis.cabrillo.edu
Subject: Velkiminn
User-Agent: Heirloom mailx 12.5 7/5/10
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
Message-Id: <20180911200818.3AF9B6B1F8@opus-ii.cis.cabrillo.edu>
From: seasky90@opus-ii.cis.cabrillo.edu (Sky Sears)
Status: RO

This mail program is pretty crazy!

From seasky90@opus-ii.cis.cabrillo.edu Tue Sep 11 13:09:13 2018
Return-Path: <seasky90@opus-ii.cis.cabrillo.edu>
X-Original-To: seasky90
Delivered-To: seasky90@opus-ii.cis.cabrillo.edu
Received: by opus-ii.cis.cabrillo.edu (Postfix, from userid 1252)
        id 9052FA6B1F8; Tue, 11 Sep 2018 13:09:13 -0700 (PDT)
Date: Tue, 11 Sep 2018 13:09:13 -0700
To: risimms@cabrillo.edu, seasky90@opus-ii.cis.cabrillo.edu
Subject: Bienvenido
User-Agent: Heirloom mailx 12.5 7/5/10
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
Message-Id: <20180911200913.9052FA6B1F8@opus-ii.cis.cabrillo.edu>
From: seasky90@opus-ii.cis.cabrillo.edu (Sky Sears)
Status: RO

This mail program is pretty crazy!

From seasky90@opus-ii.cis.cabrillo.edu Tue Sep 11 13:10:05 2018
Return-Path: <seasky90@opus-ii.cis.cabrillo.edu>
X-Original-To: cis90-test-students
Delivered-To: cis90-test-students@opus-ii.cis.cabrillo.edu
Received: by opus-ii.cis.cabrillo.edu (Postfix, from userid 1252)
        id 052FA6B1F8; Tue, 11 Sep 2018 13:10:05 -0700 (PDT)
Date: Tue, 11 Sep 2018 13:10:04 -0700
To: cis90-test-students@opus-ii.cis.cabrillo.edu
Subject: Tervetuloa
User-Agent: Heirloom mailx 12.5 7/5/10
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
Message-Id: <20180911201005.052FA6B1F8@opus-ii.cis.cabrillo.edu>
From: seasky90@opus-ii.cis.cabrillo.edu (Sky Sears)
Status: RO

This mail program is pretty crazy!

/home/cis90/seasky $
```

## file trash

```
seasky90@opus-ii:~$ file trash
/home/cis90/seasky $ file trash
trash: ASCII text
/home/cis90/seasky $
```

## mail -f trash

```
seasky90@opus-ii:~$ mail -f trash
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"trash": 3 messages
>  1 Sky Sears      Tue Sep 11 13:08  19/698  "Velkiminn"
>  2 Sky Sears      Tue Sep 11 13:09  20/722  "Bienvenido"
>  3 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
&
```

*Mail folders are just regular files containing one or more messages (ASCII text) concatenated together.*

*You can cat them out or open them with the mail command.*

# Activity

```
mail -f trash  
quit
```

```
/home/cis90/seasky $ mail -f trash  
Heirloom Mail version 12.5 7/5/10. Type ? for help.  
"trash": 3 messages  
> 1 Sky Sears Tue Sep 11 13:08 19/698 "Velkiminn"  
2 Sky Sears Tue Sep 11 13:09 20/722 "Bienvenido"  
3 Sky Sears Tue Sep 11 13:10 19/732 "Tervetuloa"  
& quit  
/home/cis90/seasky $ █
```

Use the **-f** option on the **mail** command to open a mail folder file.

*Write "it works" or "having trouble" in the chat window.*

# UNIX mail

```
mail
folder trash
q
```

```
/home/cis90/seasky $ mail
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/spool/mail/seasky90": 1 message
>A 1 Rich Simms Tue Sep 11 13:10 32/961 "Welcome"
& folder trash
Held 1 message in /var/spool/mail/seasky90
"trash": 3 messages
> 1 Sky Sears Tue Sep 11 13:08 19/698 "Velkiminn"
 2 Sky Sears Tue Sep 11 13:09 20/722 "Bienvenido"
 3 Sky Sears Tue Sep 11 13:10 19/732 "Tervetuloa"
& q
/home/cis90/seasky $ █
```

You can also open a different mail folder from inside mail using the **folder** command.

*Write "it works" or "having trouble" in the chat window.*

# More on Mail



# Forwarding Mail

# Forwarding a message with ~m

```
mail
m seasky90
<some text>
~m3
<some more text>
.
```

```
simben90@opus-ii:~
/home/cis90/simben $ mail
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/spool/mail/simben90": 6 messages 4 unread
>U  1 Sky Sears      Tue Sep 11 12:58  20/721  "Wecome"
   U  2 Sky Sears      Tue Sep 11 13:00  19/724  "Tervetuloa"
     3 Rich Simms     Tue Sep 11 13:03  31/951  "Welcome"
   U  4 Sky Sears      Tue Sep 11 13:07  20/729  "Welcome"
     5 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
   U  6 Rich Simms     Tue Sep 11 13:10  31/950  "Welcome"
& m seasky90
Subject: A welcome from Rich
Got this from Rich today:
~m3
Interpolating: 3
(continue)
- Benji
.
EOT
& q
Held 6 messages in /var/spool/mail/simben90
/home/cis90/simben $ █
```

*Benji forwards message 3 from Rich to Sky using ~m3 in the body of his message*

# Forwarding a message with ~m

```

seasky90@opus-ii-
/home/cis90/seasky $ mail
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/spool/mail/seasky90": 1 message 1 new
>N 1 Benji Simms      Wed Sep 12 09:39  45/1456  "A welcome from"
& 1
Message 1:
From simben90@opus-ii.cis.cabrillo.edu Wed Sep 12 09:39:28 2018
Return-Path: <simben90@opus-ii.cis.cabrillo.edu>
X-Original-To: seasky90
Delivered-To: seasky90@opus-ii.cis.cabrillo.edu
Date: Wed, 12 Sep 2018 09:39:28 -0700
To: seasky90@opus-ii.cis.cabrillo.edu
Subject: A welcome from Rich
User-Agent: Heirloom mailx 12.5 7/5/10
Content-Type: text/plain; charset=us-ascii
From: simben90@opus-ii.cis.cabrillo.edu (Benji Simms)
Status: R

Got this from Rich today:
> From rsimms@opus-ii.cis.cabrillo.edu Tue Sep 11 13:03:04 2018
> Return-Path: <rsimms@opus-ii.cis.cabrillo.edu>
> X-Original-To: simben90
> Delivered-To: simben90@opus-ii.cis.cabrillo.edu
> Date: Tue, 11 Sep 2018 13:03:03 -0700
> To: simben90@opus-ii.cis.cabrillo.edu
> Subject: Welcome
> User-Agent: Heirloom mailx 12.5 7/5/10
> Content-Type: text/plain; charset=us-ascii
> From: rsimms@opus-ii.cis.cabrillo.edu (Rich Simms)
> Status: RO
>
> Hello Benji,
>
> Welcome to CIS 90!
>
> Your account is on the Opus-II server which is running the
> CentOS 7 distribution of Linux.
>
> The external hostname for Opus-II is opus-ii.cis.cabrillo.edu which
> will resolve to 207.62.187.230 outside of the campus.
>
> Enjoy learning about Linux and UNIX.
>
> - Rich
>
- Benji
&

```

**mail**

**1**

*Sky reads the message from Benji. The message Benji forwarded from Rich has a ">" at the start of each line.*

# mail commands

## Alternate ways to forward a message

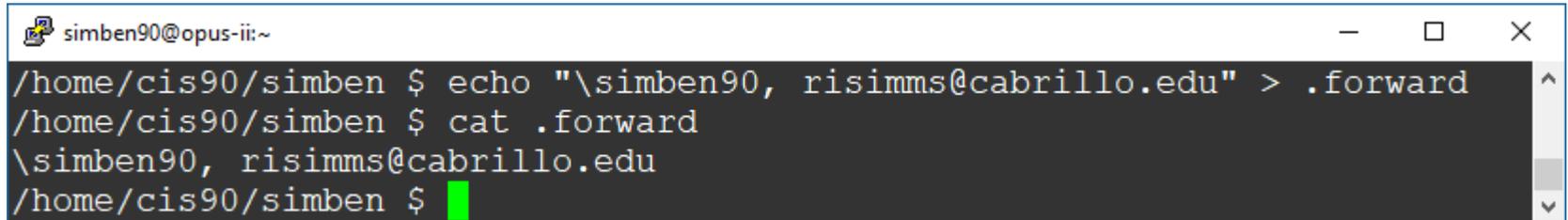
*There is an easier way to forward a message with the latest version of mailx!*

*I wonder who will be the first person to find out how its done and post the solution to the forum?*



# Automatically forwarding incoming messages

```
echo "\simben90, risimms@cabrillo.edu" > .forward  
cat .forward
```



```
simben90@opus-ii:~  
/home/cis90/simben $ echo "\simben90, risimms@cabrillo.edu" > .forward  
/home/cis90/simben $ cat .forward  
\simben90, risimms@cabrillo.edu  
/home/cis90/simben $
```

Creating a hidden *.forward* file so all email sent to simben90 on Opus-II will automatically get forwarded to risimms@cabrillo.edu and remain in Benji's in-tray.

*You can have all your incoming email on Opus be forwarded to your regular email address. Very helpful for Lab 3!*

# Automatically forwarding incoming messages

`mail simben90` *Homer sends message to Benji*

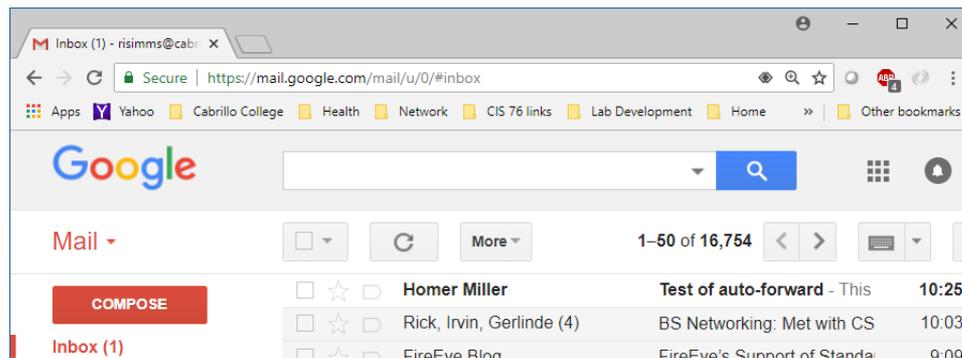
This should end up in Benji and Rich's in-trays!

```
milhom90@opus-ii:~  
/home/cis90/milhom $ mail simben90  
Subject: Test of auto-forward  
This should end up in Benji and Rich's in-trays!  
.  
EOT  
/home/cis90/milhom $
```

*Benji's  
in-tray*

```
simben90@opus-ii:~  
You have new mail in /var/spool/mail/simben90  
/home/cis90/simben $ mail  
Heirloom Mail version 12.5 7/5/10. Type ? for help.  
"/var/spool/mail/simben90": 3 messages 1 new 3 unread  
>N 3 Homer Miller Wed Sep 12 10:25 18/715 "Test of auto-forward"  
&
```

*Rich's  
gmail  
in-tray*



# Undeleting a deleted message

# u (undelete) mail command

```

simben90@opus-ii:~
/home/cis90/simben $ mail
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/spool/mail/simben90": 6 messages 4 unread
>U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Welcome"
  U 2 Sky Sears      Tue Sep 11 13:00  19/724  "Tervetuloa"
    3 Rich Simms     Tue Sep 11 13:03  31/951  "Welcome"
  U 4 Sky Sears      Tue Sep 11 13:07  20/729  "Welcome"
    5 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
  U 6 Rich Simms     Tue Sep 11 13:10  31/950  "Welcome"
& d 2
& h
  U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Welcome"
>   3 Rich Simms     Tue Sep 11 13:03  31/951  "Welcome"
  U 4 Sky Sears      Tue Sep 11 13:07  20/729  "Welcome"
    5 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
  U 6 Rich Simms     Tue Sep 11 13:10  31/950  "Welcome"
& u 2
& h
  U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Welcome"
>   2 Sky Sears      Tue Sep 11 13:00  19/724  "Tervetuloa"
    3 Rich Simms     Tue Sep 11 13:03  31/951  "Welcome"
  U 4 Sky Sears      Tue Sep 11 13:07  20/729  "Welcome"
    5 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
  U 6 Rich Simms     Tue Sep 11 13:10  31/950  "Welcome"
&

```

```

mail
d 2
h
u 2
h

```

*Benji deletes  
then undeletes  
message 2*

(q)uit

vs

e(x)it

## mail exit command

```
mail
d 2-5
h
exit
mail
```

```
simben90@opus-iii:~
/home/cis90/simben $ mail
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/spool/mail/simben90": 6 messages 4 unread
>U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Wecome"
  U 2 Sky Sears      Tue Sep 11 13:00  19/724  "Tervetuloa"
  3 Rich Simms      Tue Sep 11 13:03  31/951  "Welcome"
  U 4 Sky Sears      Tue Sep 11 13:07  20/729  "Welcome"
  5 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
  U 6 Rich Simms    Tue Sep 11 13:10  31/950  "Welcome"
& d 2-5
& h
>U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Wecome"
>U 6 Rich Simms    Tue Sep 11 13:10  31/950  "Welcome"
& exit
/home/cis90/simben $ mail
Heirloom Mail version 12.5 7/5/10.  Type ? for help.
"/var/spool/mail/simben90": 6 messages 4 unread
>U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Wecome"
  U 2 Sky Sears      Tue Sep 11 13:00  19/724  "Tervetuloa"
  3 Rich Simms      Tue Sep 11 13:03  31/951  "Welcome"
  U 4 Sky Sears      Tue Sep 11 13:07  20/729  "Welcome"
  5 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
  U 6 Rich Simms    Tue Sep 11 13:10  31/950  "Welcome"
&
```

*Benji deletes messages 2 through 5 and exits. The exit command does not save these changes and the messages are still there next time mail is run.*

# mail quit command

```
mail
d 2-5
h
quit
mail
```

```
simben90@opus-ii:~
/home/cis90/simben $ mail
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/spool/mail/simben90": 6 messages 4 unread
>U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Wecome"
  U 2 Sky Sears      Tue Sep 11 13:00  19/724  "Tervetuloa"
    3 Rich Simms     Tue Sep 11 13:03  31/951  "Welcome"
  U 4 Sky Sears      Tue Sep 11 13:07  20/729  "Welcome"
    5 Sky Sears      Tue Sep 11 13:10  19/732  "Tervetuloa"
  U 6 Rich Simms     Tue Sep 11 13:10  31/950  "Welcome"
& d 2-5
& h
  U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Wecome"
>U 6 Rich Simms     Tue Sep 11 13:10  31/950  "Welcome"
& quit
Held 2 messages in /var/spool/mail/simben90
/home/cis90/simben $ mail
Heirloom Mail version 12.5 7/5/10. Type ? for help.
"/var/spool/mail/simben90": 2 messages 2 unread
>U 1 Sky Sears      Tue Sep 11 12:58  20/721  "Wecome"
  U 2 Rich Simms     Tue Sep 11 13:10  31/950  "Welcome"
&
```

*Benji deletes messages 2 through 5 and exits. The quit command makes these changes permanent.*

*Running mail again and the deleted messages are gone.*



# Mail Documentation

# man page for mail

```
/home/cis90/milhom $ man mail
```

```

MAILX(1)                                User Commands                                MAILX(1)
NAME
mailx - send and receive Internet mail

SYNOPSIS
mailx [-BDdEFintv~] [-s subject] [-a attachment] [-c cc-addr] [-b bcc-addr] [-r from-addr] [-h hops] [-A account] [-S variable [=value]] to-addr . . .
mailx [-BDdeEHiInNRv~] [-T name] [-A account] [-S variable [=value]] -f [name]
mailx [-BDdeEinNRv~] [-A account] [-S variable [=value]] [-u user]

DESCRIPTION
Mailx is an intelligent mail processing system, which has a command syntax reminiscent of ed(1) with lines replaced by messages. It is based on Berkeley Mail 8.1, is intended to provide the functionality of the POSIX mailx command, and offers extensions for MIME, IMAP, POP3, SMTP, and S/MIME. Mailx provides enhanced features for interactive use, such as caching and disconnected operation for IMAP, message threading, scoring, and filtering. It is also usable as a mail batch language, both for sending and receiving mail.

```

*In the bash shell, use the man command for extensive documentation on mail*

# Mail ? or help commands

& ?

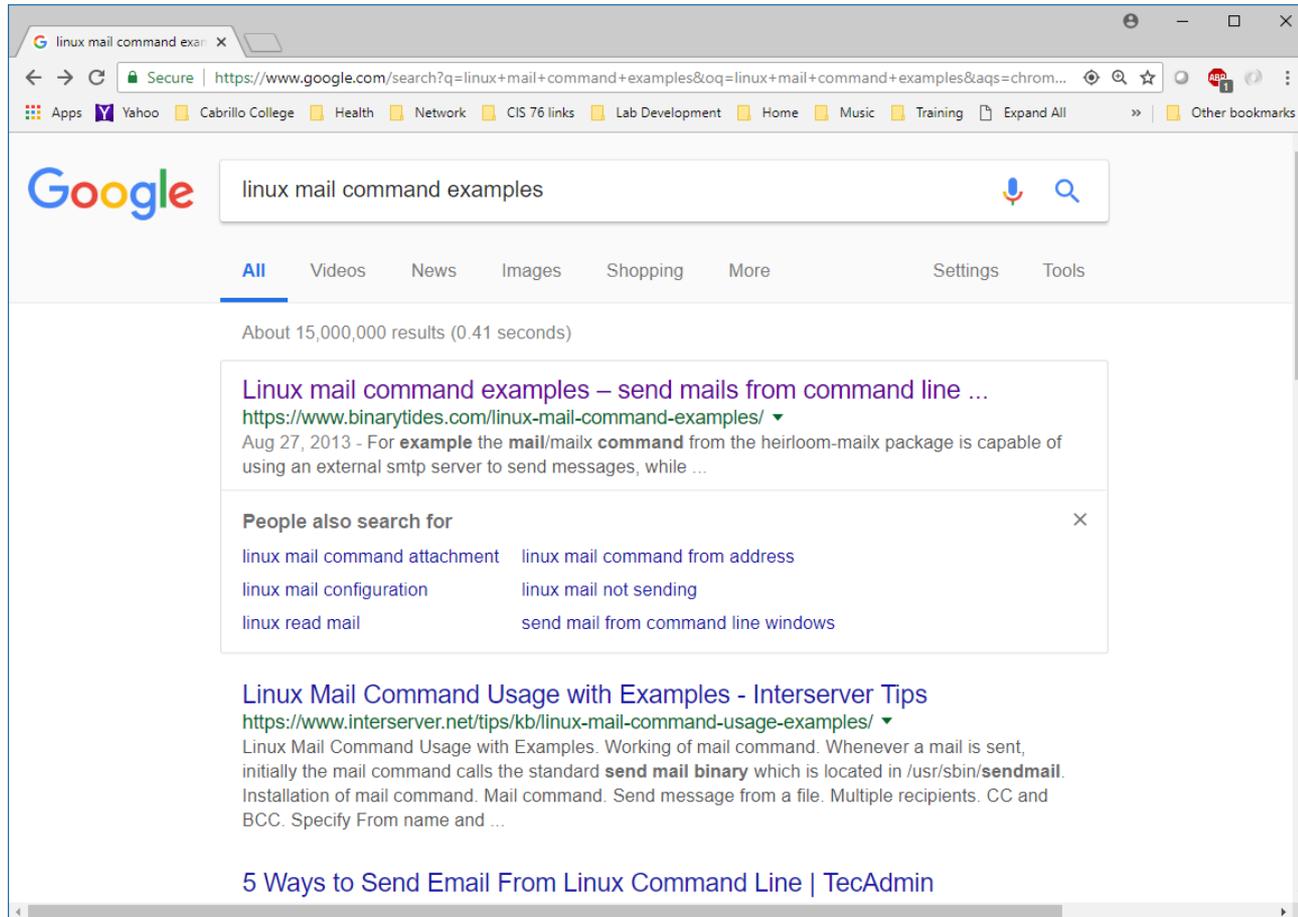
	mail commands	
type <message list>		type messages
next		goto and type next message
from <message list>		give head lines of messages
headers		print out active message headers
delete <message list>		delete messages
undelete <message list>		undelete messages
save <message list> folder		append messages to folder and mark as saved
copy <message list> folder		append messages to folder without marking them
write <message list> file		append message texts to file, save attachments
preserve <message list>		keep incoming messages in mailbox even if saved
Reply <message list>		reply to message senders
reply <message list>		reply to message senders and all recipients
mail addresses		mail to specific recipients
file folder		change to another folder
quit		quit and apply changes to folder
xit		quit and discard changes made to folder
!		shell escape
cd <directory>		chdir to directory or home if none given
list		list names of all available commands

A <message list> consists of integers, ranges of same, or other criteria separated by spaces. If omitted, mail uses the last message typed.

&

*Use the ? or help commands to see a short list of common mail commands*

# Google



*Google: linux mail command examples*

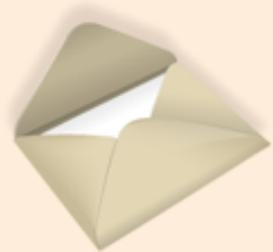
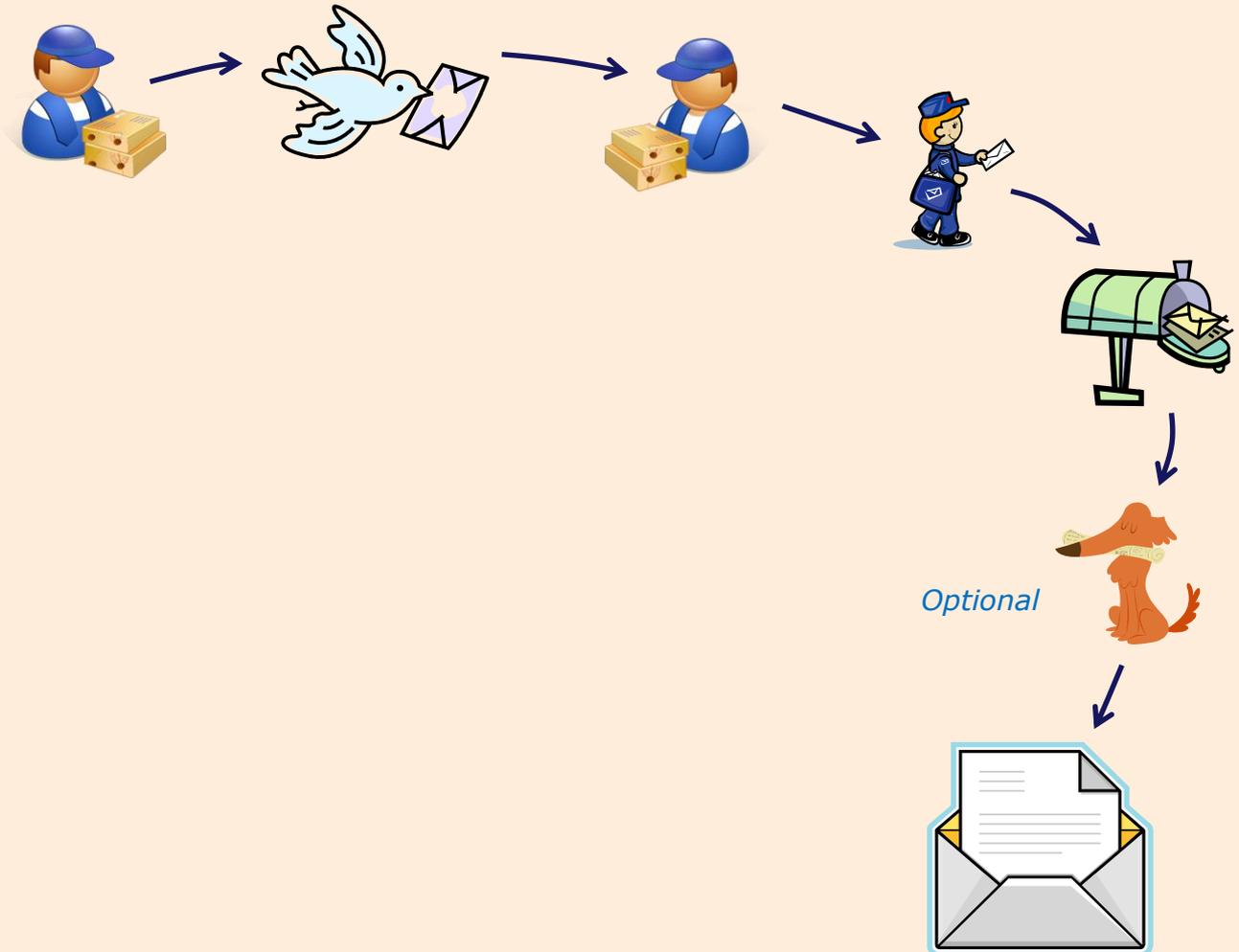
# end-to-end email (supplemental)





# end-to-end email

**FYI**  
only

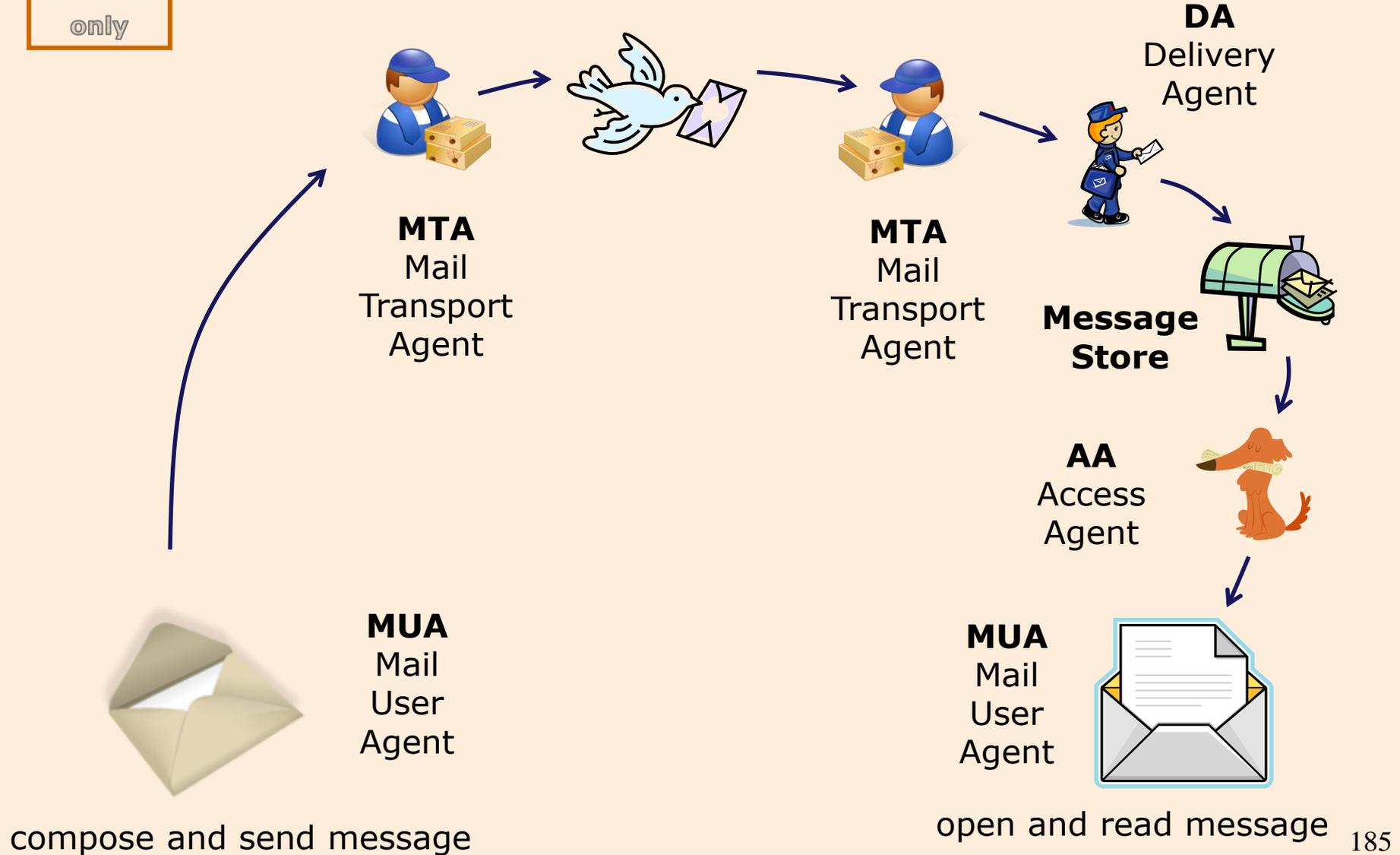


compose and send message

open and read message

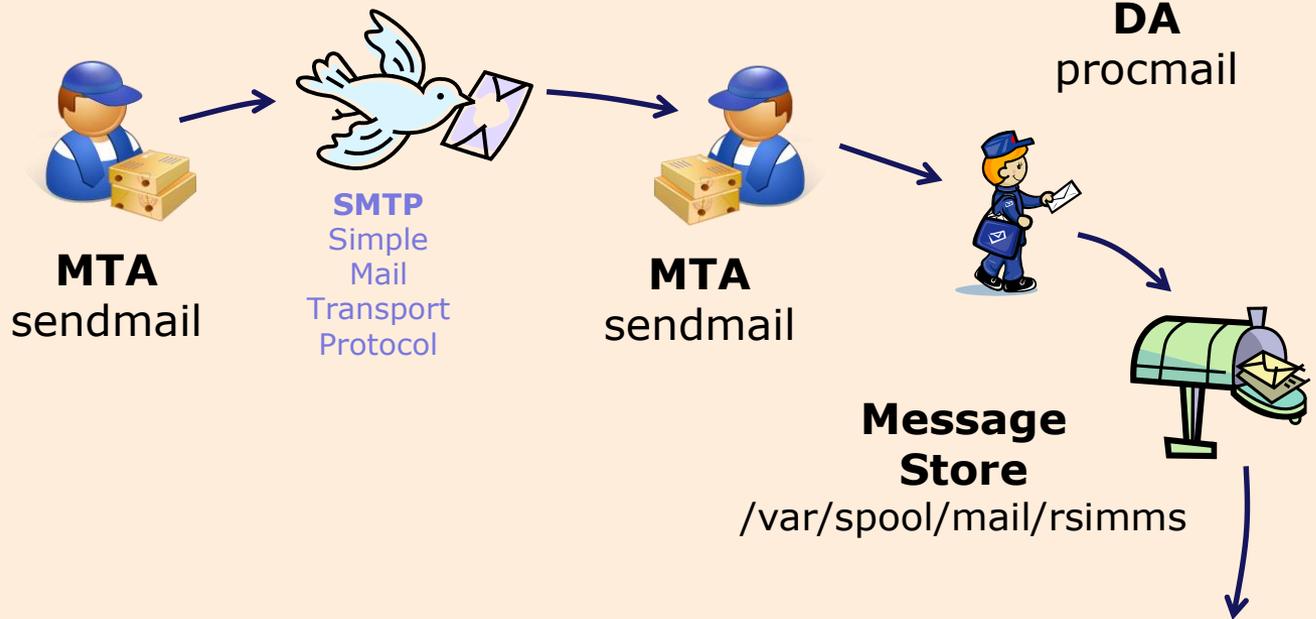
**FYI**  
only

# end-to-end email



**FYI**  
only

# end-to-end email: example Implementation



SMTP  
Simple  
Mail  
Transport  
Protocol

**MUA**  
/bin/mail

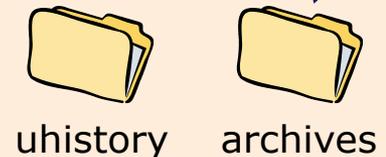
**MUA**  
/bin/mail

```
simben90@oslab:~  
/home/cis90/simben $ mail rsimms  
Subject: Hola  
Please see my post on the forum, thanks, - Benji  
.  
EOT  
/home/cis90/simben $
```

compose and send message

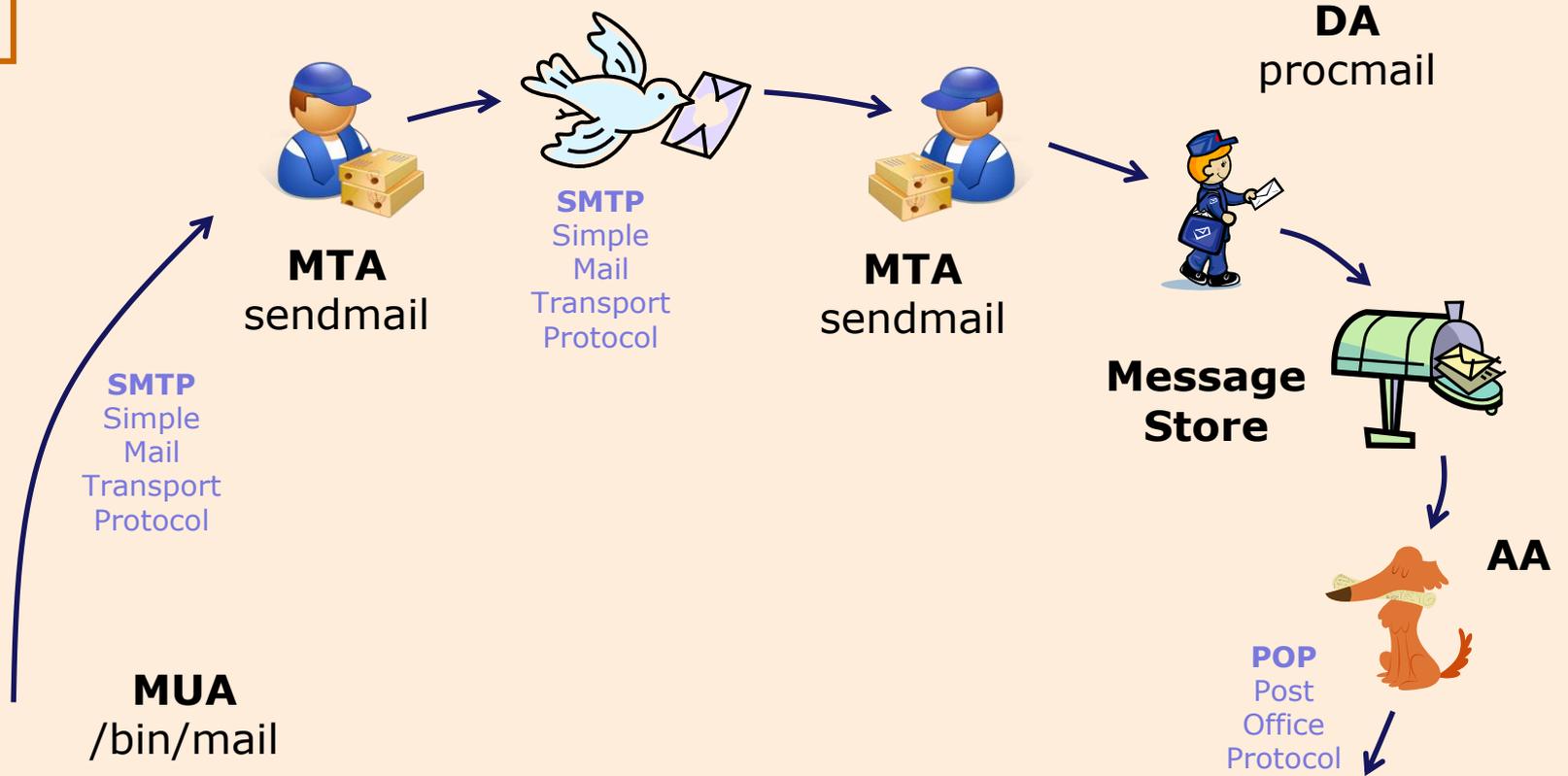
```
rsimms@oslab:~  
[rsimms@oslab ~]$ mail  
Heirloom Mail version 12.4 7/29/08. Type ? for help.  
~/var/spool/mail/rsimms*: 1 message 1 new  
UN 1 Benji Simms Wed Sep 12 09:06 20/814 "Hola"  
4 1  
Message 1:  
From: simben90@oslab.cabrillo.edu Wed Sep 12 09:06:13 2012  
Return-Path: <simben90@oslab.cabrillo.edu>  
From: Benji Simms <simben90@oslab.cabrillo.edu>  
Date: Wed, 12 Sep 2012 09:06:13 -0700  
To: rsimms@oslab.cabrillo.edu  
Subject: Hola  
User-Agent: Heirloom mailx 12.4 7/29/08  
Content-Type: text/plain; charset=us-ascii  
Status: R  
Please see my post on the forum, thanks. - Benji
```

open, read and  
save messages  
to folders



**FYI**  
only

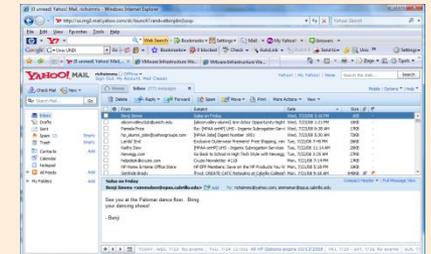
# end-to-end email: example Implementation



```
simmsben@opus:~/home/cis90/simmsben $ mail simmsmar richsimms@yahoo.com
Subject: Salsa on Friday
See you at the Palomar dance floor. Bring your dancing shoes!

- Benji
.
Cc:
/home/cis90/simmsben $
```

compose and send message



**MUA**  
Yahoo Mail

open and read message 187

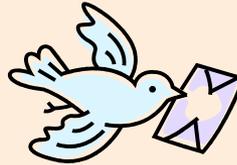
# end-to-end email: configuring your MUA (Mail User Agent)

**FYI**  
only

**SMTP**  
Simple  
Mail  
Transport  
Protocol



**MTA**  
Mail  
Transport  
Agent



**SMTP**  
Simple  
Mail  
Transport  
Protocol



**MTA**  
Mail  
Transport  
Agent



**DA**  
Delivery  
Agent



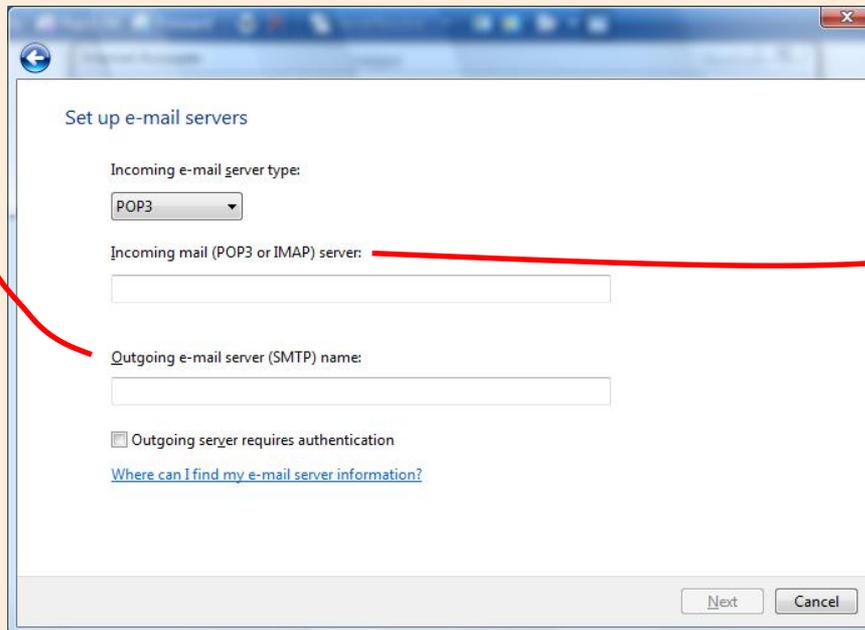
**Message  
Store**



**AA**  
Access  
Agent

**POP**  
Post  
Office  
Protocol

Example MUA: Windows Mail



*This is why you get asked for the SMTP server and the POP3/IMAP server when you set up email on your PC.*

*Your MUA needs to know this to send and receive messages.*

## How does one MTA get the IP address of the other MTA?

```
[rsimms@oslab ~]$ dig +short mx gmail.com
10 alt1.gmail-smtp-in.l.google.com.
30 alt3.gmail-smtp-in.l.google.com.
20 alt2.gmail-smtp-in.l.google.com.
40 alt4.gmail-smtp-in.l.google.com.
5 gmail-smtp-in.l.google.com.
[rsimms@oslab ~]$
```

```
[rsimms@oslab ~]$ dig +short gmail-smtp-in.l.google.com.
74.125.25.26
[rsimms@oslab ~]$
```

```
[rsimms@oslab ~]$ dig +short mx hp.com
10 smtp.hp.com.
[rsimms@oslab ~]$ dig +short smtp.hp.com.
15.73.96.120
15.73.212.90
15.73.212.88
15.73.212.87
[rsimms@oslab ~]$
```



# Other MUAs

## MTAs, DAs,

## AAs



## end-to-end email some of the many players



**MTA**



sendmail, Exim, Microsoft Exchange, Postfix

**DA**



/bin/mail, procmail, smrsh

**AA**



imapd, spop

**MUA**



gmail, /bin/mail, Outlook, Evolution, Yahoo Mail, hotmail

# Assignment



# Lab 3

Unix history  
via command-line email

## *Notes to Rich*



[ ] - Send out UNIX historical events for Lab 3

use **events** alias or

mail-lab03-events script in **~rsimms/cis90/lab03/scripts/uhist** directory

## Lab 3 - Start early and check your Opus-II email every day!

You will receive a mail message from me with a Unix historical event for a particular year. Save this message to a mailbox called *uhistory*.

The objective of this lab is to use Unix mail to exchange and collect at least 15 individual events with your classmates. There are more students than events so some students will receive the same event.

Start by sending an email to your other classmates with your event and ask them to send you their events. Each time you get a Unix event that you haven't already saved, save it to your *uhistory* mailbox.

Rules:

- Do this lab on Opus-II using */bin/mail* (the mail command).
- When someone asks you for the date that you received, you must send it to them with the subject being just the year of the event, e.g. 1972. The email message must contain the complete line of event text for that year.
- Each email saved in *uhistory* must be for a single event/year.
- Each email saved in *uhistory* must have a subject that is just the year of the event.

If you receive an email that is missing the event or does not have the year as the subject, reply to the sender and ask them to resend a corrected version.

When you get all the Unix event messages saved in your *uhistory* mailbox you should have up to 22 messages, each with a different date for the Subject field. Delete any duplicate dates you may have.

*Lab 3 (and all future labs) must be done on Opus-II*

## Tips for Lab 3

*Start this lab early in the week and check your mail daily to collect all messages*

- Use the **s** command in mail to save a message to your *uhistory* mailbox
- Use **mail -f uhistory** to review your collection
  - Use the **d** command in mail to delete duplicates
- Use the **check3** script to review progress
- You can **submit** your work as many times as you wish up to the deadline. Only the last submittal will be graded. Submit whatever you have completed for partial credit if you run out of time.

*Post and read more tips on the forum*



# Wrap up

## New commands:

### mail

<integer>  
[Enter key]  
p <message list>  
d <message list>  
s <message list> file  
u <message list>  
R <message list>  
r <message list>  
m <user list>  
q  
x  
h  
z or z-

### mesg

### write

### irssi

## New Files and Directories:

/var/mail

/var/mail/*username*

mbox

### - UNIX mail

print specific message specified by <integer>  
print next message  
print messages  
delete messages  
save (append) messages to file  
undelete messages  
reply to sender  
reply to all  
mail to specific users  
quit saving changes  
exit without saving changes  
print message headers  
scroll forward or backward through headers

- Enable or disable writes to your terminal

- Write message to another user

- IRC chat client

- Message store for mail

- Incoming mailbox for *username*

- File in users home directory where read messages are archived to

## Next Class

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

**1st five forum posts  
and Lab 3**

Quiz questions for next class:

- What command can you use to output text to another user's terminal?
- Is a mailx folder implemented as a directory or a regular file?
- In mailx what command lists the messages in your "in tray"?

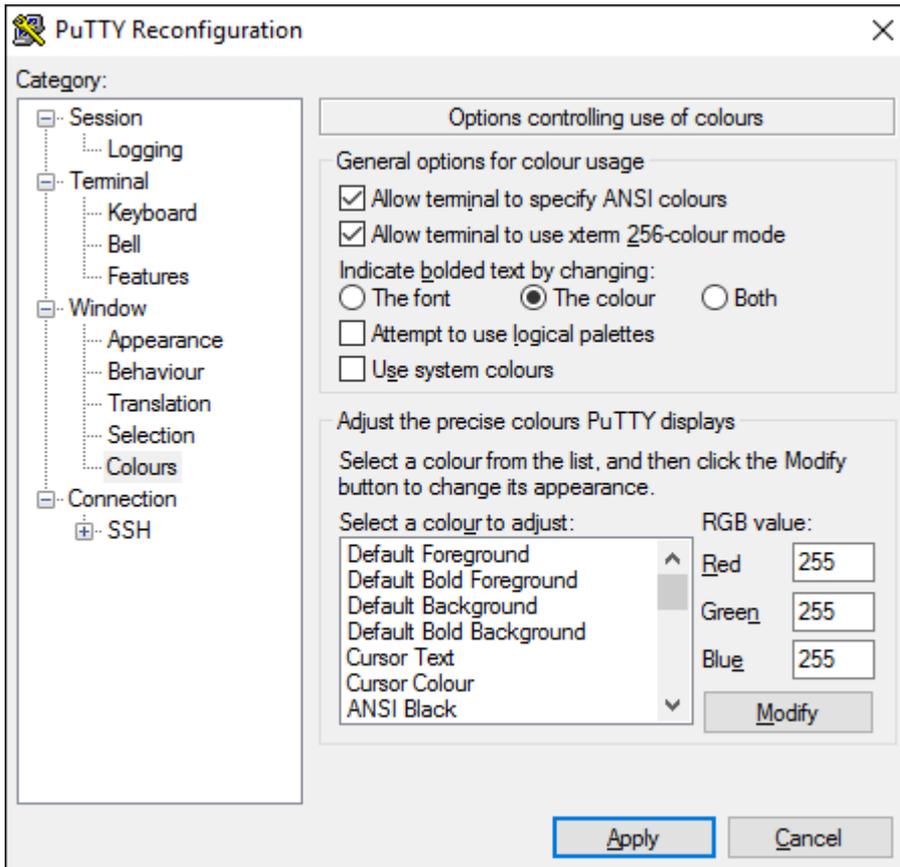
End Meeting

End  
Meeting

# Backup



## Rich's ConferZoom checklist - Putty Colors



### Putty Colors

Default Foreground 255 255 255  
 Default Bold Foreground 255 255 255  
 Default Background 51 51 51  
 Default Bold Background 255 2 85  
 Cursor Text 0 0 0  
 Cursor Color 0 255 0  
 ANSI Black 77 77 77  
 ANSI Black Bold 85 85 85  
 ANSI Red 187 0 0  
 ANSI Red Bold 255 85 85  
 ANSI Green 152 251 152  
 ANSI Green Bold 85 255 85  
 ANSI Yellow 240 230 140  
 ANSI Yellow Bold 255 255 85  
 ANSI Blue 205 133 63  
 ANSI Blue Bold 135 206 235  
 ANSI Magenta 255 222 173  
 ANSI Magenta Bold 255 85 255  
 ANSI Cyan 255 160 160  
 ANSI Cyan Bold 255 215 0  
 ANSI White 245 222 179  
 ANSI White Bold 255 255 255

<http://looselytyped.blogspot.com/2013/02/zenburn-pleasant-color-scheme-for-putty.html>



# Practice Questions Lessons 1 & 2



## Practice Test Questions

What is simben90's uid (user ID) on Opus-II?

## Practice Test Questions

What is simben90's uid (user ID) on Opus-II?

*Benji's uid is 1201*

```
/home/cis90/simben $ id simben90  
uid=1201(simben90) gid=190(cis90) groups=190(cis90),100(users)  
/home/cis90/simben $
```



## Practice Test Questions

What day of the week was Sept 11, 2001?



## Practice Test Questions

What day of the week was Sept 11, 2001?

*It was a Tuesday*

```
/home/cis90/simben $ cal 9 2001
    September 2001
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
/home/cis90/simben $
```

## Practice Test Questions

Where (what directory) does the the **ps** command reside?



## Practice Test Questions

Where (what directory) does the **ps** command reside?

```
/home/cis90/simben $ type ps  
ps is /usr/bin/ps
```

*It's in the /usr//bin directory*



## Practice Test Questions

Parse the following command line. What is the command? How many options and how many arguments are there? What are the options and arguments?

```
ls -l /boot/grub/
```

## Practice Test Questions

Parse the following command line. What is the command? How many options and how many arguments are there? What are the options and arguments?

```
ls -l /boot/grub/
```

*Command: ls*

*One option: -l (for long listing)*

*One argument: /boot/grub*

## Practice Test Questions

Parse the following command line. What is the command? How many options and how many arguments are there? What are the options and arguments?

```
echo "1 2 3" four 5 six
```

## Practice Test Questions

Parse the following command line. What is the command? How many options and how many arguments are there? What are the options and arguments?

```
echo "1 2 3" four 5 six
```

*Command: echo*

*No options*

*4 arguments:*

- *"1 2 3"*
- *four*
- *5*
- *six*

## Practice Test Questions

Which program gave you this error message?

```
/home/cis90/simben $ uname-x  
-bash: uname-x: command not found  
/home/cis90/simben $
```

## Practice Test Questions

Which program gave you this error message?

```
/home/cis90/simben $ uname-x  
-bash: uname-x: command not found  
/home/cis90/simben $
```

*It was the bash program. bash is the shell being used and it could not find a command named uname-x on the path*

## Practice Test Questions

Which program gave you this error message?

```
/home/cis90/simben $ uname -x  
uname: invalid option -- 'x'  
Try `uname --help' for more information.  
/home/cis90/simben $
```

## Practice Test Questions

Which program gave you this error message?

```
/home/cis90/simben $ uname -x  
uname: invalid option -- 'x'  
Try `uname --help' for more information.  
/home/cis90/simben $
```

*It was the uname program. The uname program was loaded into memory and executed. It started to process the options it received from the shell and didn't like the -x option. It printed the error message and aborted.*



## Practice Test Questions

What terminal device are you using?



## Practice Test Questions

What terminal device are you using?

Use the `tty` command to find out:

```
/home/cis90/simben $ tty  
/dev/pts/0  
/home/cis90/simben $
```



## Practice Test Questions

What type of terminal are you using?

## Practice Test Questions

What type of terminal are you using?

Use the **echo \$TERM** command to find out:

```
/home/cis90/simben $ echo $TERM  
xterm
```

*This user's terminal type is xterm*



## Practice Test Questions

What directories make up your path?

## Practice Test Questions

What directories make up your path?

*Use echo \$PATH to find out:*

```
/home/cis90/simben $ echo $PATH  
/usr/local/bin:/usr/bin:/usr/local/sbin:/usr/sbin:  
/home/cis90/simben/./bin:/home/cis90/simben/bin:.
```

*/usr/local/bin*

*/usr/bin*

*/usr/local/sbin*

*/usr/sbin*

*/home/cis90/simben/./bin*

*/home/cis90/simben/bin*

*.*

*There are seven directories specified  
on this user's path*

## Practice Test Questions

Are the **yum**, **useradd**, and **yell** commands on your path?

## Practice Test Questions

Are the **yum**, **useradd**, and **yell** commands on your path?

```
/home/cis90/simben $ type yum useradd yell
yum is /usr/bin/yum           Yes, on path
useradd is /usr/sbin/useradd  Yes, on path
-bash: type: yell: not found  No, not on path
```

*Note: If you see "is hashed" that means bash has previously searched the path for this command. The location of the command has been saved in the hash table to speed up subsequent searches.*



## Practice Test Questions

What is the name of the environment variable that defines your shell prompt?

## Practice Test Questions

What is the name of the environment variable that defines your shell prompt?

*It's PS1*

```
/home/cis90/simben $ echo $PS1  
$PWD $
```

```
/home/cis90/simben $ echo "The PWD variable =" $PWD  
The PWD variable = /home/cis90/simben  
/home/cis90/simben $
```

*Both PS1 and PS2 are environment variables*

## Practice Test Questions

How do you change the shell prompt to "Enter next command: " ?

## Practice Test Questions

How do you change the shell prompt to "Enter next command: " ?

*Set PS1 to new value using "=" sign*

```
/home/cis90/simben $  
/home/cis90/simben $ PS1="Enter next command: "  
Enter next command:  
Enter next command: echo $PWD  
/home/cis90/simben  
Enter next command: echo $PS1  
Enter next command:  
Enter next command:
```

## Practice Test Questions

How do you restore the original shell prompt so it displays the current directory followed by a \$ and a blank?

## Practice Test Questions

How do you change the shell prompt to "Enter next command: "  
then change it back again?

*To restore the original prompt use:*

```
Enter next command: PS1='$PWD $ '  
/home/cis90/simben $
```

# More Review (variables)

# Environment Variables

Use `$` for the "value" of a variable

Analogy: Each variable is a named location. The contents of any location is the "value" of that variable.

```
$ echo $LOGNAME
simmsben
```

```
$ echo HOME
HOME
```

```
$ echo $HOME
/home/cis90/simmsben
```

```
$ echo $SHELL
/bin/bash
```

```
$ echo $HOSTNAME
opus-ii.cabrillo.edu
```



# Make your own shell variables

*Imagine creating a new variable for use as the fan speed in your car*



```

$ echo $FAN
$ FAN=HI
$ echo $FAN
HI
$ echo "The fan is set to: " $FAN
The fan is set to: HI
$ FAN=LO
$ echo "The fan is set to: " $FAN
The fan is set to: LO
    
```

*Initially it's not defined so if echoed it has a null value*

*Create a variable named FAN and set the value to "HI"*

*Now set the FAN variable to "LO"*

## Activity

```
/home/cis90/simben $ weather=rain
/home/cis90/simben $ country=Spain
/home/cis90/simben $ location="the plain"
/home/cis90/simben $ echo The $weather in $country stays mainly in $location
The rain in Spain stays mainly in the plain
/home/cis90/simben $
```

When **echo** is loaded into memory and starts to run:

- 1) How many arguments does it receive from the bash shell?
- 2) Does **echo** see "\$weather" or "rain" as one of the arguments it receives?

*Write your answers in the chat window*