



Rich's lesson module checklist

- ☐ Slides and lab posted
- ☐ WB converted from PowerPoint
- ☐ Print out agenda slide and annotate page numbers

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

- ☐ Lab tested
- ☐ Supplemental videos uploaded

- ☐ Forum created and registration tested
- ☐ Opus accounts made (with TBDs for walk-ins) and populated
- ☐ CIS 90 VMs created and configured
- ☐ Surveys and PW sheet posted
- ☐ Canvas LMS setup
- ☐ Login credentials document created
- ☐ Welcome letter sent

- ☐ Rosters printed
- ☐ Add codes printed

- ☐ Backup slides, whiteboard slides, CCC info, handouts on flash drive
- ☐ Spare 9v battery for mic
- ☐ Key card for classroom door



Student checklist for attending class

The screenshot shows a web browser window with the address bar displaying `simms-teach.com/cis90calendar.php`. The page title is "Rich's Cabrillo College CIS Classes CIS 90 Calendar". On the left sidebar, there is a link labeled "CIS 90". The main content area has a tab labeled "Calendar". Below the calendar, there is a section titled "Presentation slides (download)" and a link labeled "Enter virtual classroom".

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 CCC Confer.
7. Log into Opus with Putty or ssh command.

Note: Blackboard Collaborate Launcher only needs to be installed once. It has already been downloaded and installed on the classroom PC's.

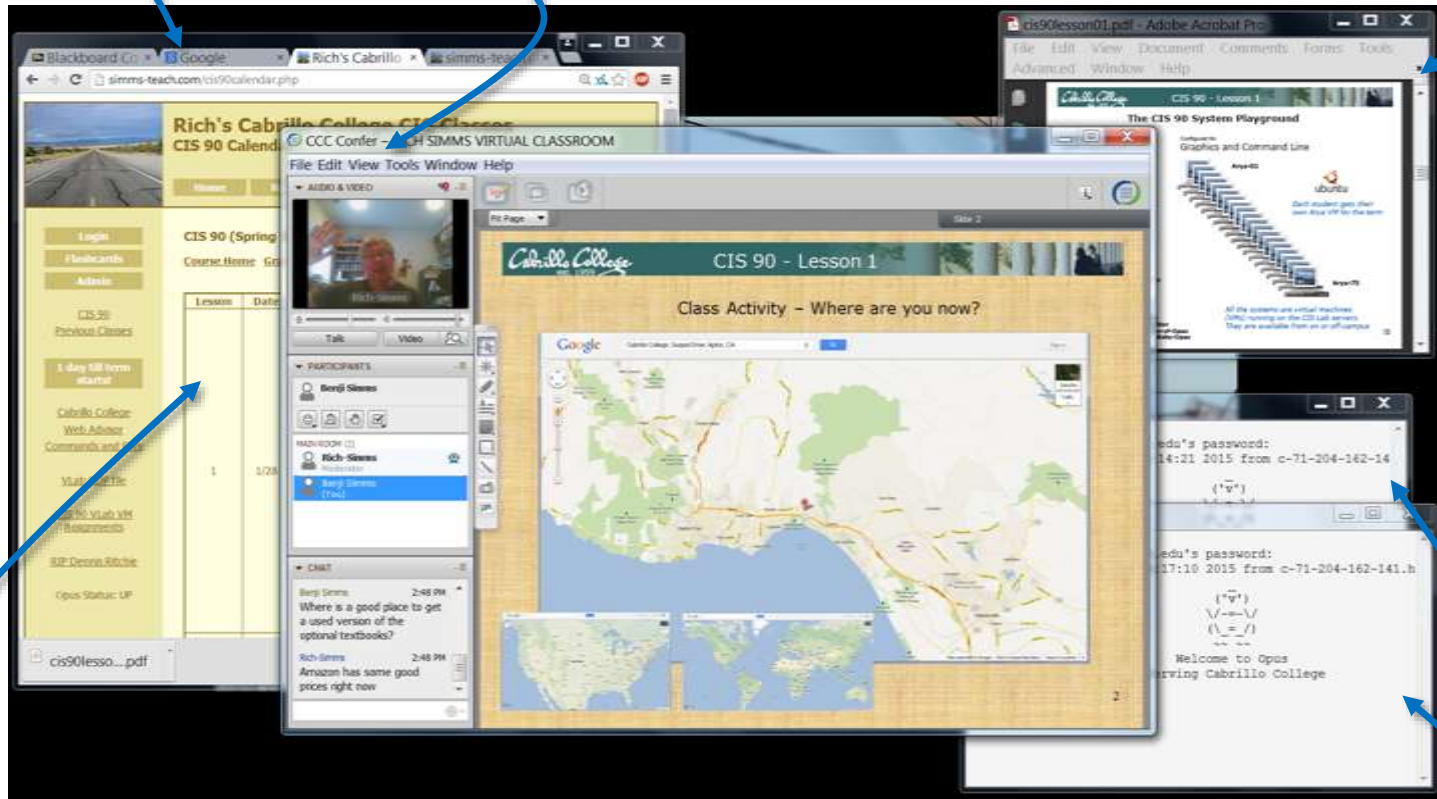


Student checklist for suggested screen layout

☐ Google

☐ CCC Confer

☐ Downloaded PDF of Lesson Slides



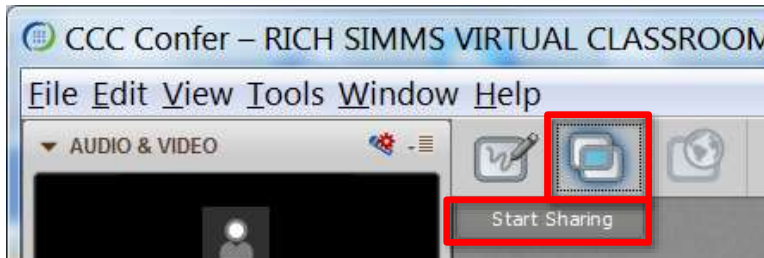
☐ CIS 90 website Calendar page

☐ One or more login sessions to Opus

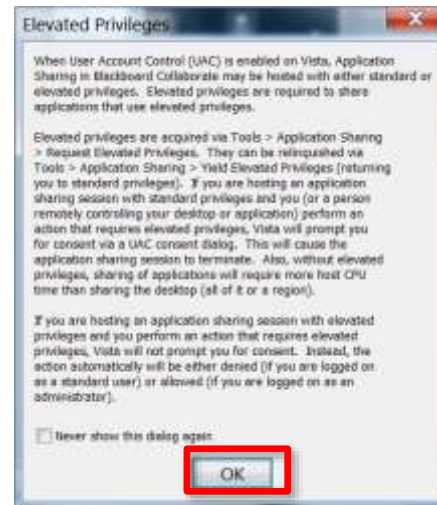


Student checklist for sharing desktop with classmates

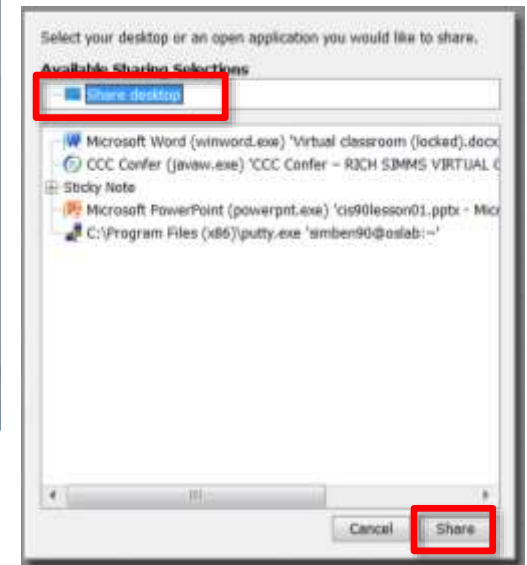
1) Instructor gives you sharing privileges



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



3) Click OK button.



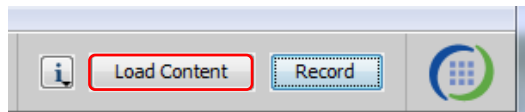
4) Select "Share desktop" and click Share button.



Rich's CCC Confer checklist - setup

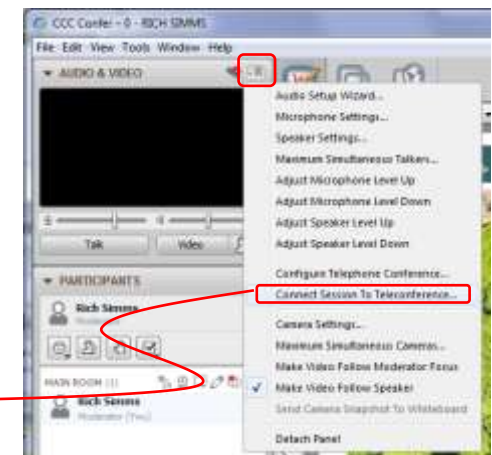


[] Preload White Board



[] Connect session to Teleconference

Session now connected to teleconference



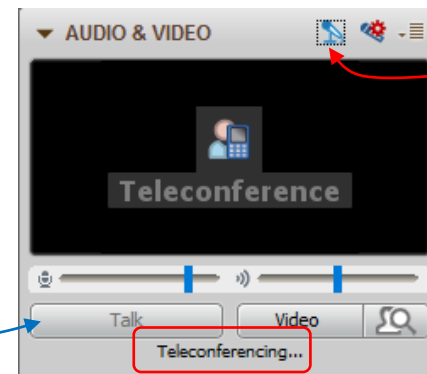
[] Is recording on?



Red dot means recording

[] Use teleconferencing, not mic

Should be grayed out



Should change from phone handset icon to little Microphone icon and the Teleconferencing ... message displayed



Rich's CCC Confer checklist - screen layout



The screenshot displays a Windows desktop environment during a CCC Confer session. The desktop includes several open applications:

- CCC Confer - 0 - RIC...**: A window showing the conferencing interface with a video feed of Rich Simms, a list of participants (Rich Simms, Moderator), and a chat window.
- simms-teach.com/docs/cis90/cis-90-TEST-1-Fall-12.pdf**: A web browser window displaying a quiz titled "Part 1 - Flashc (1 point each)". The quiz questions are:
 - [Q1] What command shows the other users logged in to the computer?
 - [A1] _____
 - [Q2] What environment variable is used by the shell to determine which directories to search when locating a command?
 - [A2] _____
- Terminal window**: A Putty terminal window showing a login session for "simben90@oslab:". The output includes:


```
login as: simben90
simben90@oslab.cabrillo.edu's password:
Access denied
simben90@oslab.cabrillo.edu's password:
Last login: Mon Oct 8 18:58:43 2011 from 10.10.10.10
d.com
```
- vSphere Client**: A window showing the vSphere interface, including a list of virtual machines and a "Recent Tasks" section.

Red boxes and arrows highlight specific components:

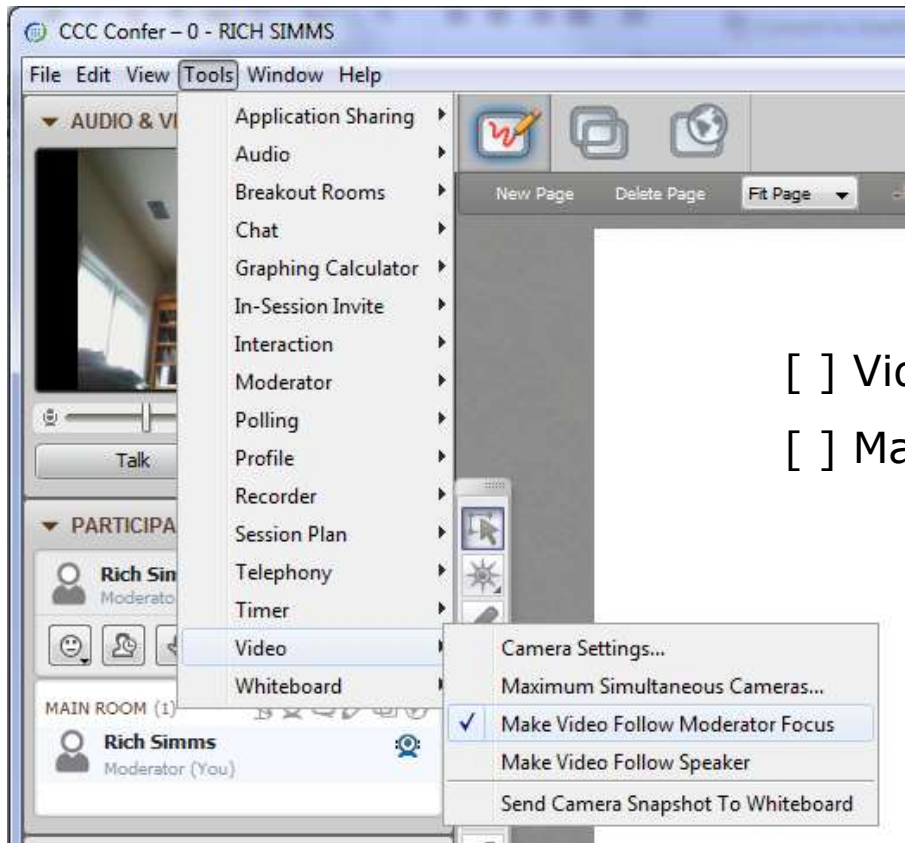
- foxit for slides**: Points to the PDF viewer window.
- chrome**: Points to the web browser window.
- putty**: Points to the terminal window.
- vSphere Client**: Points to the vSphere interface window.

[] layout and share apps





Rich's CCC Confer checklist - webcam setup

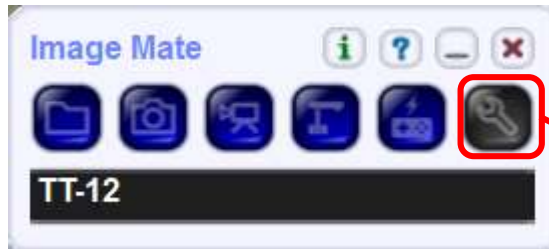


[] Video (webcam)

[] Make Video Follow Moderator Focus



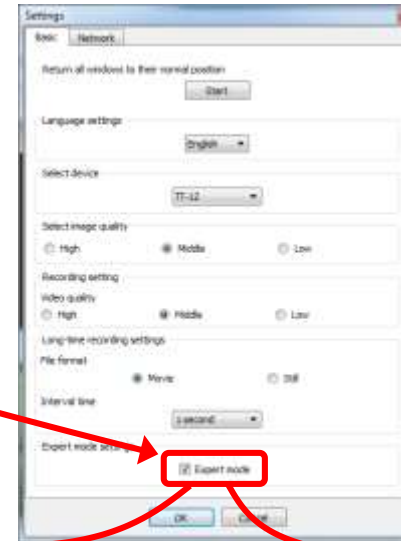
Rich's CCC Confer checklist - Elmo



Elmo rotated down to view side table



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



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

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

Elmo rotated up to view white board



Rich's CCC Confer checklist - universal fixes

Universal Fix for CCC Confer:

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

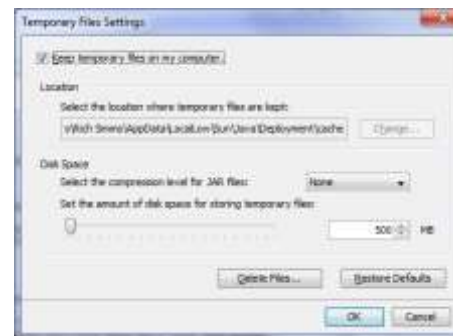
Control Panel (small icons)



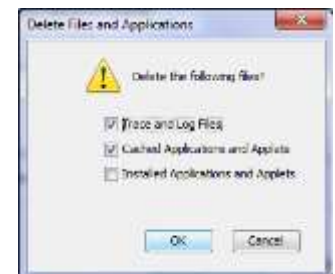
General Tab > Settings...



500MB cache size



Delete these



Google Java download



Start

Sound Check

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

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



Introductions

Introductions and Credits



Jim Griffin

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



Rich Simms

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

And thanks to:

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



Instructor: **Rich Simms**

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

Passcode: **136690**



Jacob



Ethan



Amro



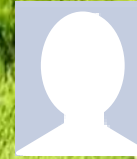
Becka



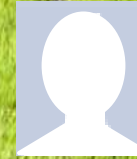
Brenda



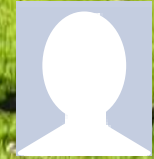
Nikki



Wayne



Tyler



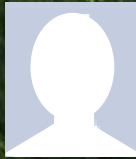
Justin



Nick



Cody



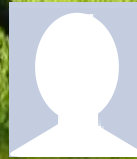
Miles



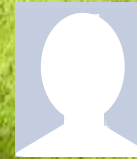
Carrie



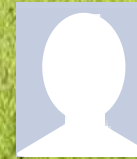
Daniel



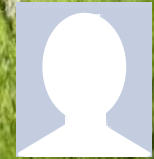
Steven



Wes



Jade



Brandon



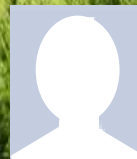
Alan



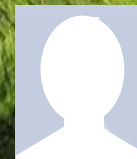
Bryanda



Maxwell



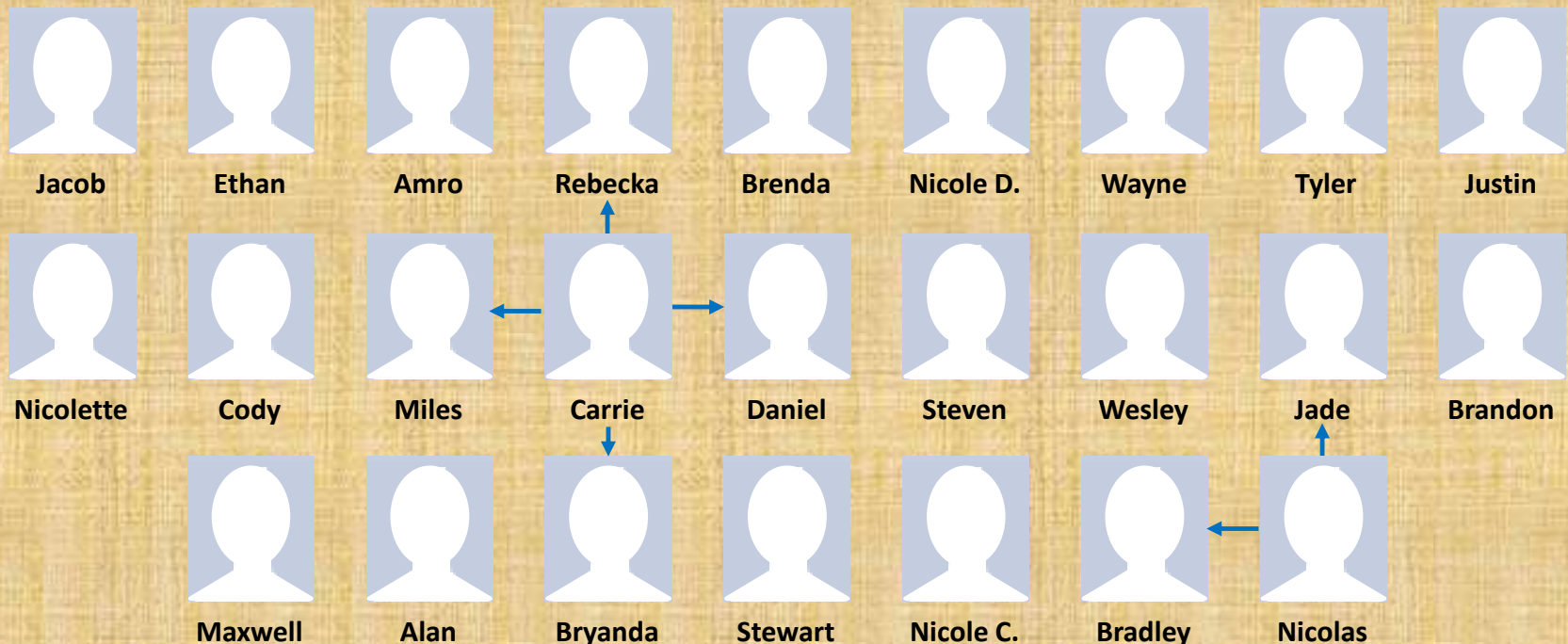
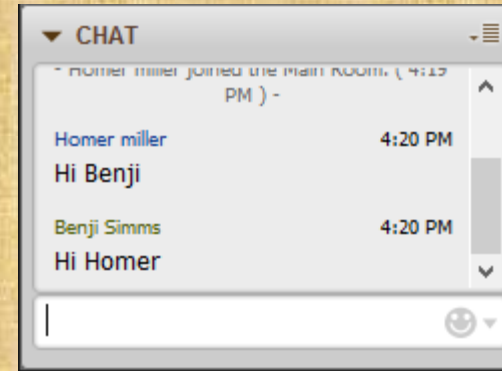
Nicole



Brad

First Activity

Use the chat window in CCC Confer to say Hi to your adjacent "virtual classmates"



If your name is not listed above you can chat Hi to anyone you want!



Why take this class



Student Learner Outcomes

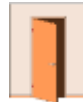
1. Navigate and manage the UNIX/Linux file system by viewing, copying, moving, renaming, creating, and removing files and directories.
2. Use the UNIX features of file redirection and pipelines to control the flow of data to and from various commands.
3. With the aid of online manual pages, execute UNIX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

Why learn the UNIX/Linux command line?
Answer: Opens up more career path options

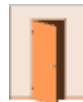
CIS 90
Introduction to
UNIX/Linux



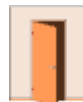
System administration



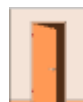
Cyber security



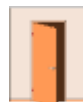
Entrepreneur



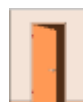
Technical sales and/or services



Help desk (technical support)



Software developer (programmer)



Many more

Class and Linux Overview

Objectives

- Understand how this course works
- Overview of computers and UNIX/Linux
- Learn how to login via ssh
- Learn first UNIX/Linux commands

Agenda

- Introductions
- Why take this class
- How this class works
- Lab resources
- Computers
- UNIX/Linux Overview
- Logging in via SSH
- First login
- First commands
- Housekeeping
- Navigating systems
- Assignment
- Wrap up

How this class works

Attending class

How to attend class each week

- Wednesdays - 9:00AM to 12:05PM
 - Section 91342 meets online in this virtual classroom
 - Section 91343 meets simultaneously in room 828 on the Aptos Main Campus

Option 1: **Online “synchronous”** - from anywhere connect online to the "live" virtual classroom using CCC Confer. Use the “Enter virtual classroom” link on:

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

Option 2: **Traditional** - drive to campus, find parking, walk to the 800 building and take a seat in the classroom.

Option 3: **Online archives “asynchronous”** - watch the archived class recording online using CCC Confer at a time that works for you. Use the “Class archives” link on:

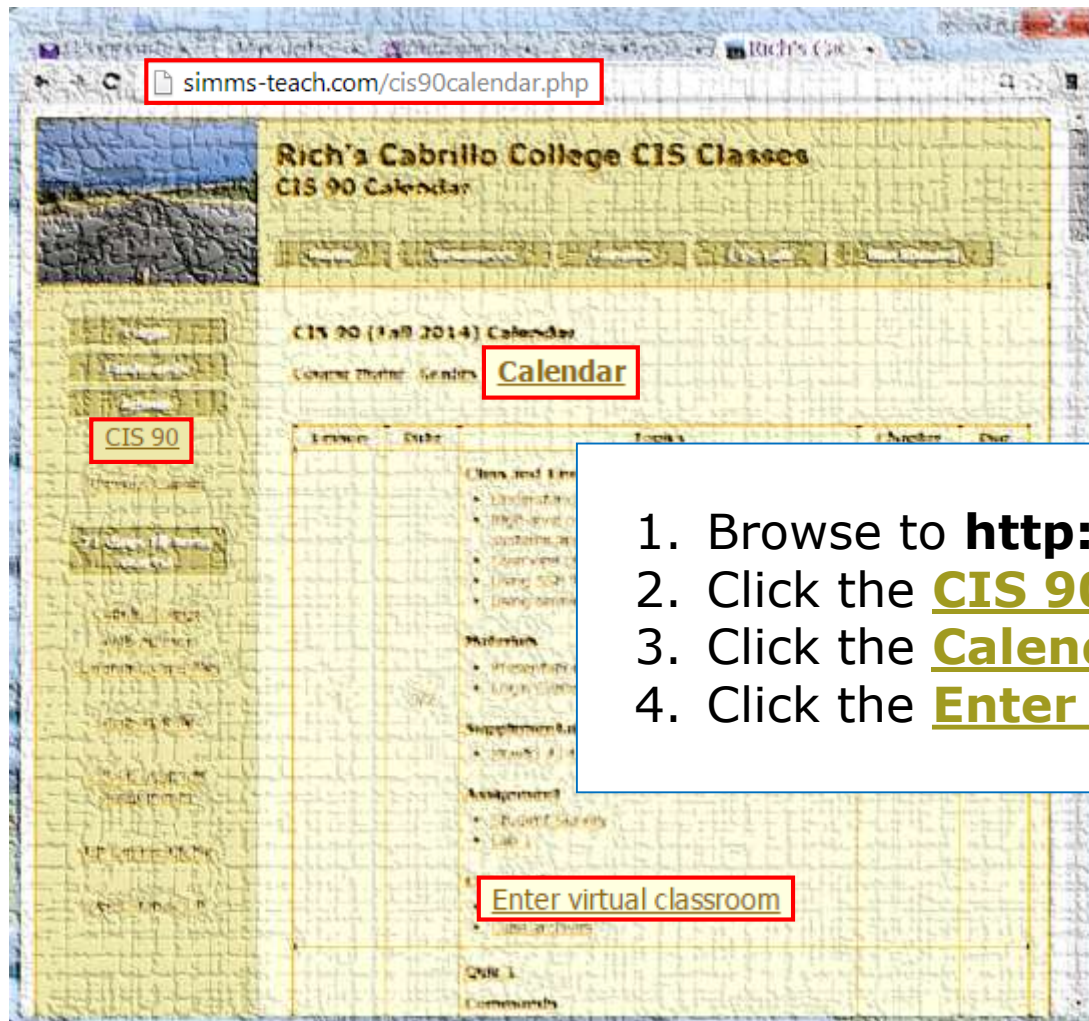
<http://simms-teach.com/cis90calendar.php>

*It doesn't matter which section you enrolled in. You can use **any** method of attending for **any** of the classes.*

Attending Class

(supplemental)

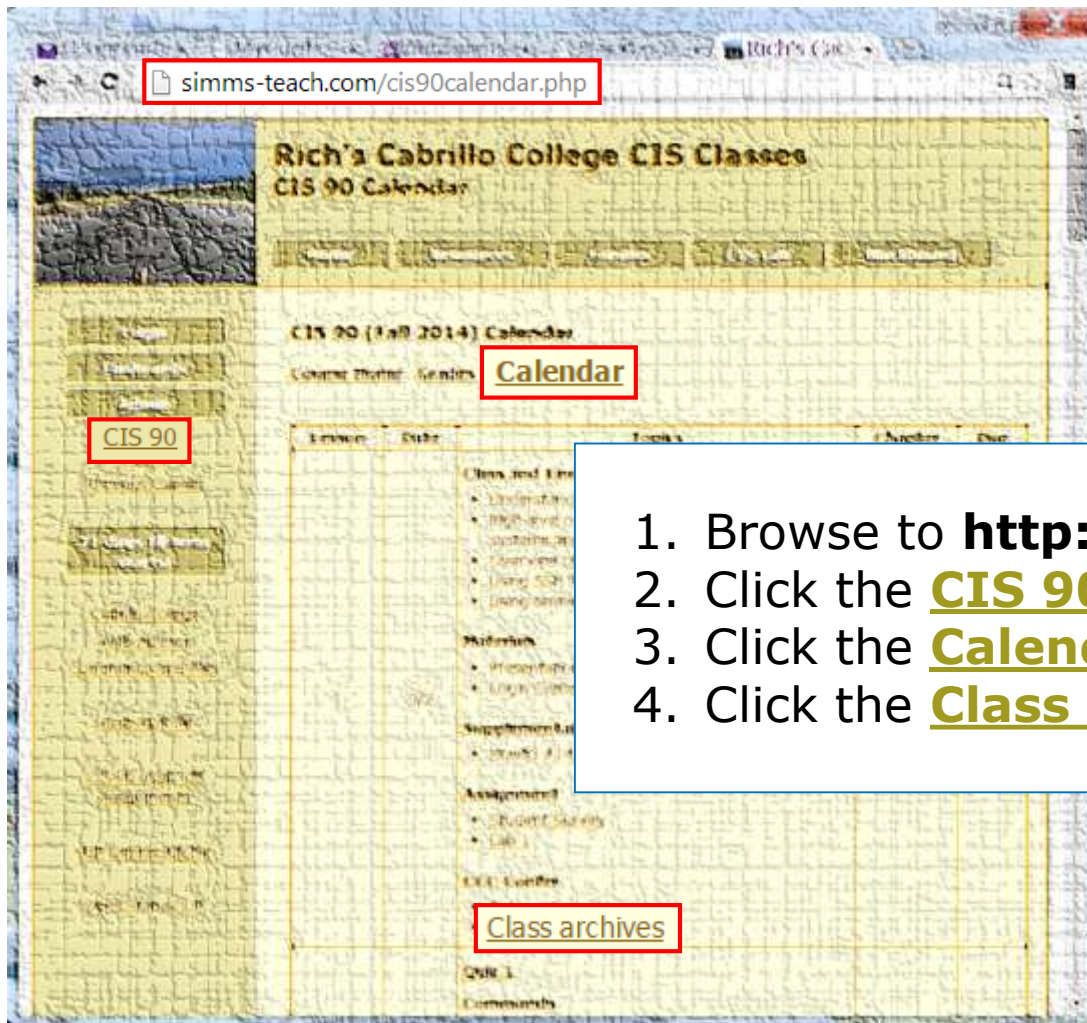
Option 1: **Online (synchronous)** - from anywhere connect online to the "live" virtual classroom using CCC Confer.



1. Browse to **<http://simms-teach.com>**
2. Click the **[CIS 90](#)** link
3. Click the **[Calendar](#)** link
4. Click the **[Enter virtual classroom](#)** link



Option 3: **Online archives (asynchronous)** - watch the archived class recording online using CCC Confer at a time that works for you.



1. Browse to **<http://simms-teach.com>**
2. Click the **[CIS 90](#)** link
3. Click the **[Calendar](#)** link
4. Click the **[Class archives](#)** link

CCC Confer

CCC Confer - Attending class online

The screenshot displays the CCC Confer application window titled "CCC Confer - 0 - RICH SIMMS". The interface includes a menu bar (File, Edit, View, Tools, Window, Help) and a toolbar with icons for drawing, erasing, and navigating. The main content area shows a presentation slide titled "CIS Linux Classes" with the Cabrillo College logo and instructor information: "Instructor: Rich Simms" and "Dial-in: 888-450-4821". The slide features a grid of 20 white silhouette icons representing participants. Two blue callout boxes with red arrows point to specific interface elements: one points to a row of four icons (smiley face, hand, microphone, checkmark) in the PARTICIPANTS panel, and the other points to the chat area at the bottom left. The PARTICIPANTS panel lists "Benji" and "Rich Simms (Moderator)". The CHAT panel shows a log of events: "- You joined the Main Room. (2:23 PM) -" and "- Rich Simms joined the Main Room. (2:24 PM) -".

Rich Simms

Talk Video

PARTICIPANTS

Benji

MAIN ROOM (2)

Rich Simms
Moderator

Benji
(You)

CHAT

- You joined the Main Room. (2:23 PM) -
- Rich Simms joined the Main Room. (2:24 PM) -

Cabrillo College
est. 1959

CIS Linux Classes

Instructor: Rich Simms
Dial-in: 888-450-4821

Show your state of mind, let others know you stepped away, raise your hand, and indicate responses using these controls

Ask and answer questions using the chat area

CCC Confer - Attending class online

When dialed in by phone you can use:

- *0 Contact the operator for assistance.
- *6 Mute/unmute your individual line with a private announcement.

This only applies if you dialed in using a phone



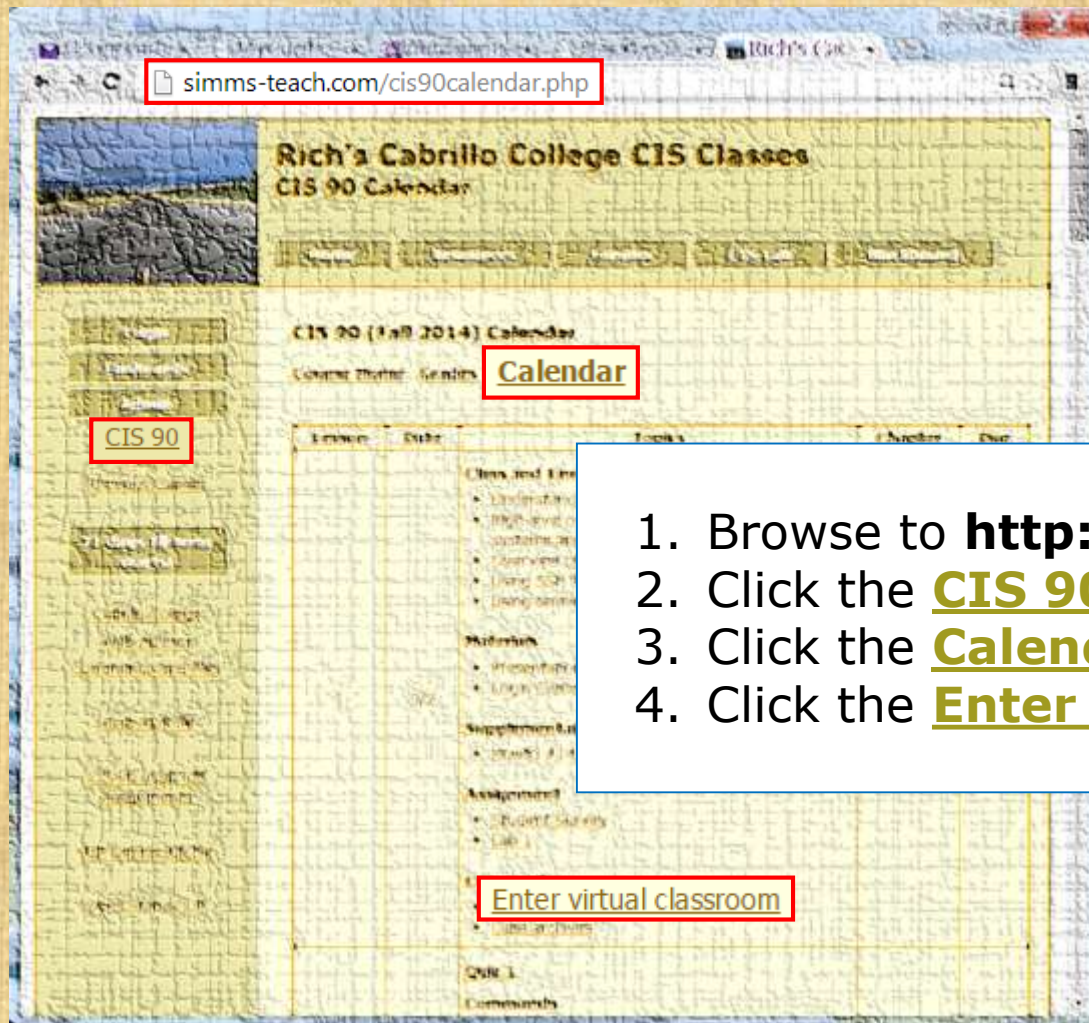
Help the Instructor with CCC Confer

Students who attend class on the Aptos campus should still use CCC Confer.

- If you notice **an online student with their electronic hand up that the instructor missed** please let the instructor know.
- If you notice the instructor **forgot to Share the presentation** material please let the instructor know.
- If you notice the instructor **forgot to turn on recording** please jump up and down and wave your arms to let the instructor know!

CCC Confer (supplemental)

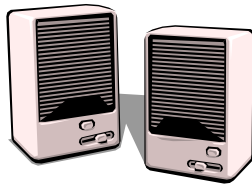
Enter the CCC Confer virtual room



1. Browse to **<http://simms-teach.com>**
2. Click the **[CIS 90](#)** link
3. Click the **[Calendar](#)** link
4. Click the **[Enter virtual classroom](#)** link



- Listen using your computer's speakers/headset or with your phone using the dial-in number

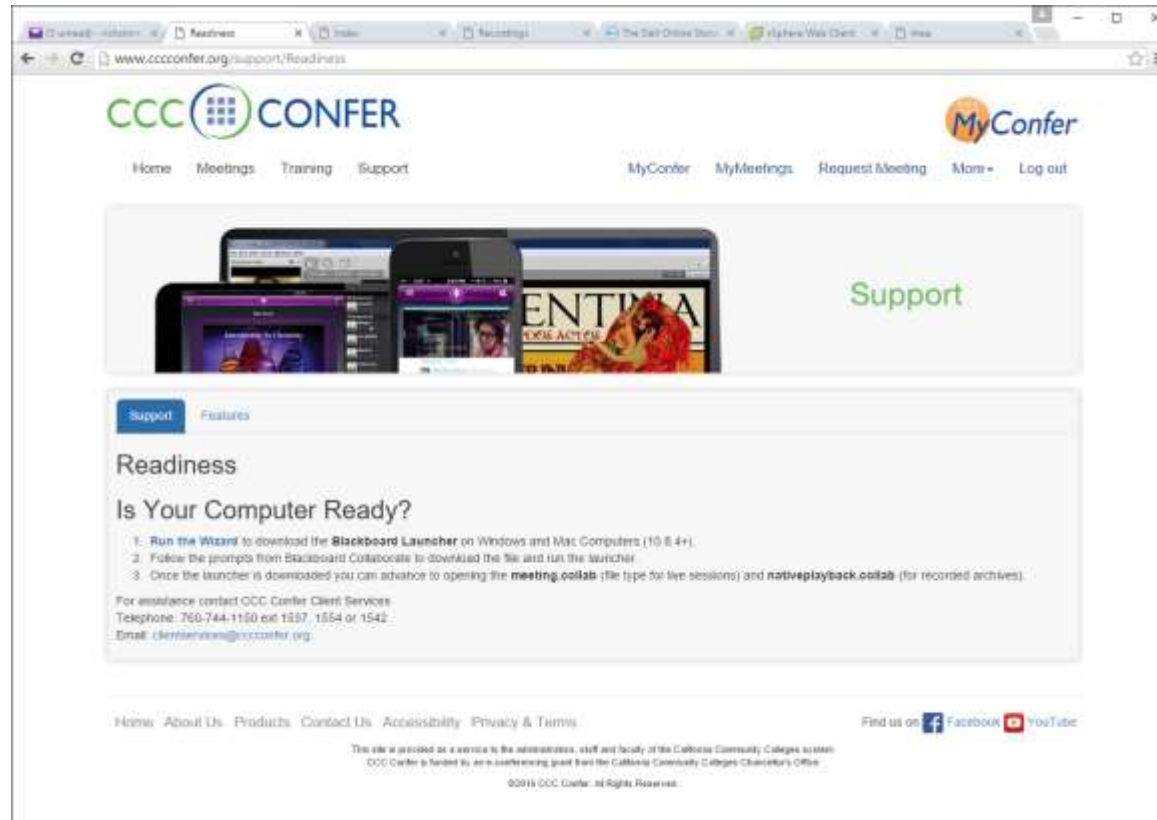


- Ask questions using the chat window or just speak if dialed in with your phone (or Skype)

Dialing in by phone (or Skype) is best because you can ask and answer questions by speaking rather than use the chat window

CCC Confer - Is your computer ready?

<http://www.cccconfer.org/support/Readiness>



Browse to the link above anytime before the first class. The first time setup for CCC Confer can take several minutes!

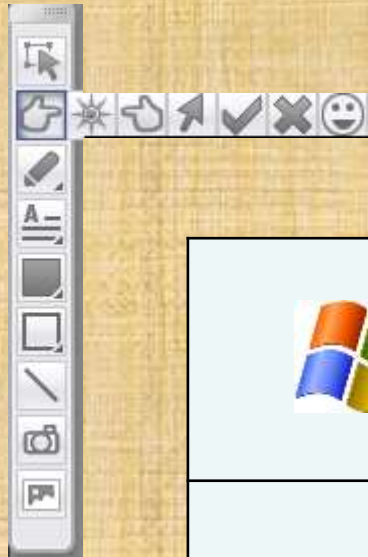
CCC Confer - Java may be downloaded
the first time you use CCC Confer



*CCC Confer uses Java which requires a download
and installation of the Java Runtime Environment
from java.com (Oracle)*

Instructor Note:

*Switch to
preloaded
whiteboard*

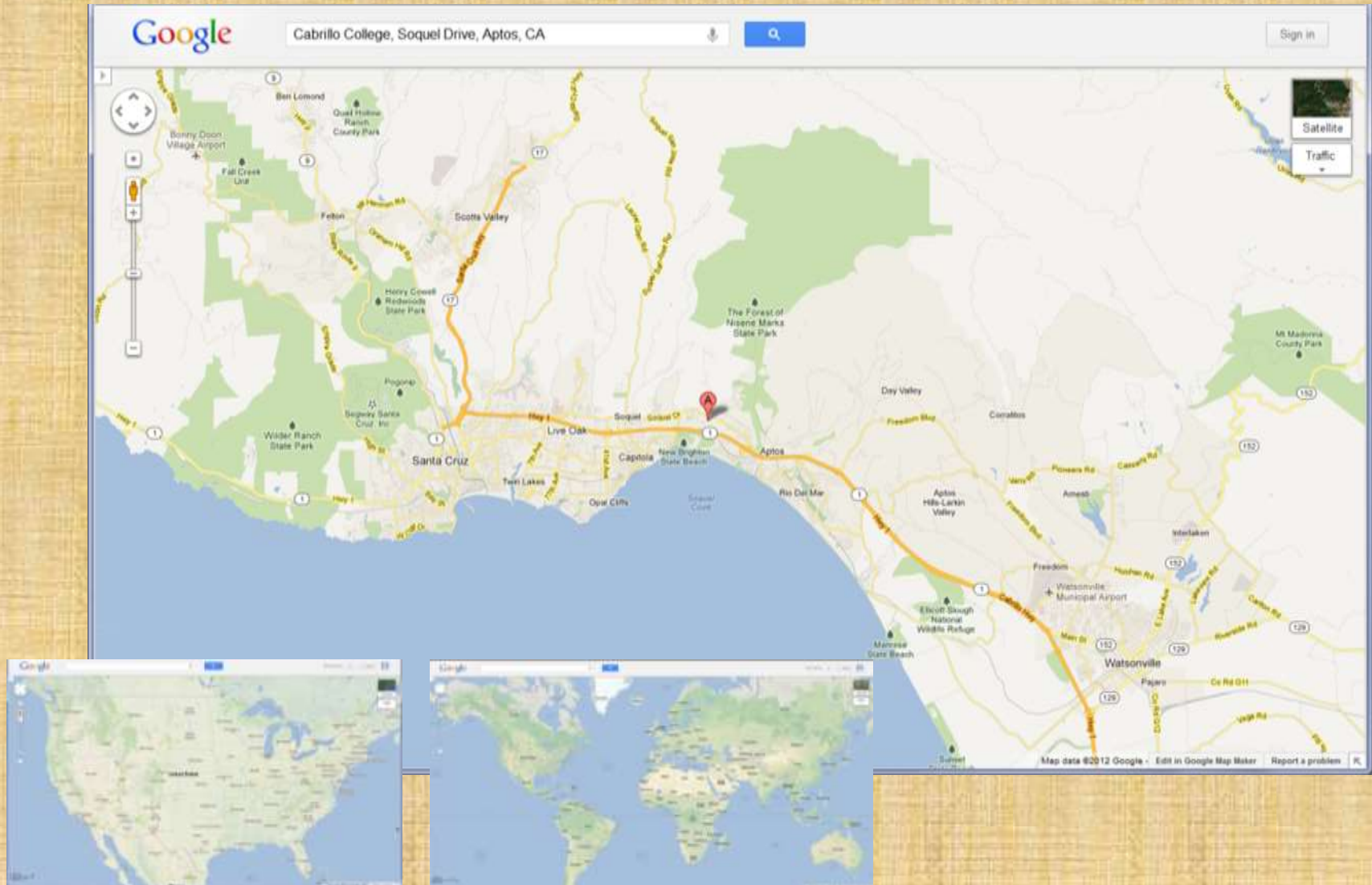


Class Activity

What kind of computer did you use to join CCC Confer?

			Other

Class Activity – Where are you now?



Roll Call

If you are attending class by watching the recordings in the archives email the instructor at: risimms@cabrillo.edu to provide roll call attendance.

Login Credentials

Username and passwords



The Login Credentials slides are not included in these lesson slides. To locate a copy:

1) See the Welcome email sent by the instructor to registered and wait-listed students.

*2) Or login into Canvas
(<https://cabrillo.instructure.com>) and read the Welcome announcement.*

Instructor Note:

*Turn Recording On
Switch back to
shared slides*

Syllabus, Calendar and Grades

Activity

Find the syllabus

Browse to: <http://simms-teach.com>

Rich's Cabrillo College CIS Classes
CIS 90 Home

CIS 90 (Fall 2014) Syllabus

Course Home | [Notes](#) | [Calendar](#)

Introduction to UNIX/Linux

- Tuesdays - 1:00PM to 4:05AM
- Section 84743 meets in room 828 on the Aptos Main Campus
- Section 86576 meets simultaneously online in [this virtual classroom](#)
- UNIX 3 prerequisites: none, recommended: CIS 11 or CIS 122
- Optional Textbooks, available:
 - [Harvey Holt's Guide to](#)
 - by Harvey Holt
 - McGraw-Hill ISBN: 10
 - [Linux User's Guide: D&G](#)
 - by Carolyn Z. Gley
 - Franklin Beedle & Associates

Course Description

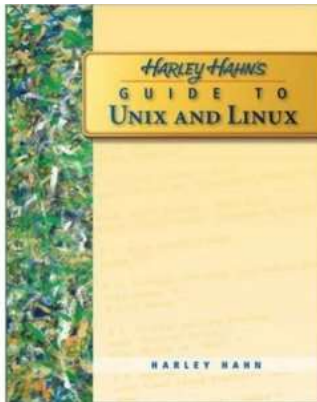
Provides a technical overview of the UNIX/Linux operating system, including hands-on experience with commands, files, and tools. Topics include basic UNIX/Linux commands, files and directories, port editing, electronic mail, pipes and filters, X Windows, shell environments and scripting. Required for students wishing to pursue the UNIX/Linux track leading to industry certification.

1) Click on **CIS 90**
on left panel

2) Then click on
Course Home
to see the Syllabus

Optional CIS 90 Textbook

*This textbook is **optional** but nice to have if you want to dig deeper into the material provided by the lesson slides.*



I really like the very first sentence in Harley Hahn's book:

"This book will change your life."

Optional Textbook:

Harley Hahn's Guide to Unix and Linux
by Harley Hahn
McGraw-Hill ISBN: 0073133612

Optional CIS 90 Gear

If you like “hands-on” you will love a Raspberry Pi

If you find your really enjoy learning UNIX/Linux and want your own private server then you should consider:



- | | |
|---------|---|
| \$39.95 | Raspberry Pi 2 - Model B - ARMv7 with 1G RAM |
| \$7.95 | 5V 2A Switching Power Supply w/ 20AWG 6' MicroUSB Cable |
| \$11.95 | 8GB Card with NOOBS 1.4 |
| \$11.95 | Miniature WiFi (802.11b/g/n) Module |

CIS 90 Spring 2016

Class meets in room **828** and **online** every **Wednesday morning**:

- 15 lessons: **9:00AM-12:05 PM**, from **Jan 27th** to **May 11th**
- Final exam: **7:00AM-9:50AM**, on **Monday May 16th**, in room **828**

January							February							March						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
					1	2		1	2	3	4	5	6			1	2	3	4	5
3	4	5	6	7	8	9	7	8	9	10	11	12	13	6	7	8	9	10	11	12
10	11	12	13	14	15	16	14	15	16	17	18	19	20	13	14	15	16	17	18	19
17	18	19	20	21	22	23	21	22	23	24	25	26	27	20	21	22	23	24	25	26
24	25	26	27	28	29	30	28	29						27	28	29	30	31		
31																				
April							May							June						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
					1	2	1	2	3	4	5	6	7				1	2	3	4
3	4	5	6	7	8	9	8	9	10	11	12	13	14	5	6	7	8	9	10	11
10	11	12	13	14	15	16	15	16	17	18	19	20	21	12	13	14	15	16	17	18
17	18	19	20	21	22	23	22	23	24	25	26	27	28	19	20	21	22	23	24	25
24	25	26	27	28	29	30	29	30	31					26	27	28	29	30		

STARTING CLASS TIME/DAY(S)

Classes starting between:

EXAM HOUR

EXAM DATE

6:30 am and 8:55 am, MW/Daily.....	7:00 am-9:50 am.....	Wednesday, May 18
9:00 am and 10:15 am, MW/Daily.....	7:00 am-9:50 am.....	Monday, May 16

The typical week

<http://simms-teach.com>



Use the
Forum
to collaborate
with classmates
at any time



Work on labs or practice tests
during the week.

All assignments and due dates
are on the **Calendar** page



Calendar
All due dates are
found here

Wednesday

"First minute" quiz

Lecture on new lesson material

Class activities

*Previous week lab assignments
due 11:59PM (Opus time)*



Thursday
is grading day



Check the **Grades**
page to see grades
on labs, quizzes
and tests



Peek at the **Extra Credit**
page if you need more
points

Contacting the instructor

- Use the forum for the fastest response on technical or class related questions.
- Use email for personal matters. If it's not personal I will probably encourage you to post your question on the forum so I can answer it there. This is preferable because your other classmates can benefit from the answer.
- Weekly office hours:
<http://babyface.cabrillo.edu/salsa/listing.jsp?staffId=1426>
- Avoid leaving a message on voice mail. Checked rarely so don't expect a fast response (if any)!



Find the Calendar page

Click on **CIS 90**
on left panel

Then click on **Calendar** to see dates for every class meeting, quiz, and test. The "**Due**" column indicates what assignments are due on those dates by 11:59PM (Opus time).

Course Calendar

Lesson	Date	Topics	Chapter	Due*
		Quiz 4		
		Review		
		- Review lessons 1-4 - Practice skills - Learn about filename expansion characters		
		Materials		
		- Presentation slides (download) - Practice test (download)		
		Assignment		
		NA		
		CCC Confer		
		Enter virtual classroom Class archives		
5	3/10			Lab 4
		Managing Files		
		- Creating - Copying - Moving - Renaming - Removing - Linking		
		Materials		
		Presentation slides (download)		
		Test #1		
		Test (download)		
		Assignment		
		Lab 5		
		CCC Confer		
		Enter virtual classroom Class archives		
6	3/17		5 8.13-8.16 (Gillay) 25 p715-729 (Hahn)	

First minute quiz

What is due by 11:59PM (Opus time) that date (LATE WORK IS NOT ACCEPTED)

Links to virtual classroom and archived recordings

References to material in the textbook

Test

Lesson # and Date

Lesson slides, feel free to download during class for local viewing

Lab assignment

CCC Confer links to join class online or review archives

Activity

Find the Grades page

Please browse to: **<http://simms-teach.com>**

Click on **CIS 90**
on left panel

Then click on **Grades** to see the grading policy and monitor points earned

Course Grading

Monitor this page to track your progress in the course.

Your grade is based solely on the number of points you earn. It offers flexibility and gives you control.

Use extra credit to earn up to 90 additional points

Your default grading choice will be a letter grade. This can be changed to Pass/No Pass by emailing a request to the instructor.

Each student is assigned a secret LOR code name

Rich's Cabrillo College CIS Classes
CIS 90 Grades

Home | CIS 90 | CIS 90 Grades | CIS 90 Labs | CIS 90 Project

CIS 90 (Spring 2014) Grades
Course Home | LinkHub

Points can be earned from the following activities:

- Test and quizzes - 30 points (5%)
- Tests - 40 points (7%)
- Forum posts - 30 points (5%)
- Lab assignments - 300 points (55%)
- Project - 40 points (7%)

How your grade is determined:

Students can earn up to 560 extra points using the activities listed above. The course grade is based on the number of points earned.

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

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

Choice of Letter or Pass/No Pass

You indicate your grading choice on the Student Survey form passed out during the first class. You can verify your grading choice at any time on the same form. Contact the instructor by email with any questions or to request a change in grading choice.

Pass/No Pass Rules

The instructor may provide letters of recommendation against students who, having a documented excuse, the instructor will extend both second and third chances areas of performance. Students who perform well in the first two weeks of class, others who perform well in the second week, and others who perform well in the third week, will be given the chance to go above and beyond expectations. The letter is an excellent way to document the student's performance in the class.

Current Progress

Code Name	Grading Choice	Quizzes & Tests										Forum				Labs										Project	Extra Credit	Total	Grade			
		Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	T1	T2	T3	F1	F2	F3	F4	L1	L2	L3	L4	L5	L6	L7					L8	L9	L10
Max Points		3	3	3	3	3	3	3	3	3	30	30	30	20	20	20	20	30	30	30	30	30	30	30	30	30	30	30	60	90	560	
adaldrida	grade																															

More on Grading

[Course Home](#) [Calendar](#)

Points can be earned from the following activities:

- First minute quizzes - 30 points (5%)
- Tests - 90 points (16%)
- Forum posts - 80 points (14%)
- Lab assignments - 300 points (54%)
- Project - 60 points (11%)

How your grade is determined:

A student can earn up to 560 total points doing the activities listed above. The course grade is based on the number of points earned.

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

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

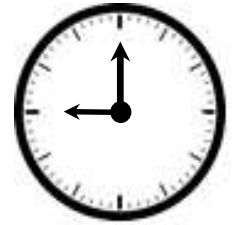
You control your grade. The more points you earn the higher your grade will be.

Grading - Lab Assignments

- 10 labs, 30 points each
- Due at **11:59PM** (Opus time) on the date shown on the course Calendar.
- **Late work is not accepted.** There is no credit for any work turned in after the deadline. If you don't complete a lab assignment, please turn in what you have, by the due date, for partial credit.
- Students may work together and collaborate on labs but they must submit their own work to get credit.
- Lab resources, instructors, and assistants are available in the CIS lab. In addition the Linux Opus server and the CIS VLab may be accessed from anywhere over the Internet.

*A lab assignment due at 11:59PM will get **no credit** if turned in **one minute late** at 12:00AM which is midnight the next day!*

Grading - First Minute Quizzes



- 10 quizzes, 3 points each
- The quiz questions are shown on CCC Confer at **9:00AM** sharp. Answers are emailed to the instructor. The **order of the questions will not be known** until the quiz is given! Emailed answers that are **not in order will be marked as incorrect.**
- The quiz questions are given out in advance and students can use the forum to collaborate on answers prior to class.
- Quizzes are open book/notes. Students may not give or ask others for assistance while taking a quiz.
- There are **no makeup's** for these quizzes and they **must be taken and turned in within the first few minutes of class.**
- Students that attend by watching the archives can do some extra credit work instead. In the past many working students have joined the class briefly at the start just to take the quiz and then return to work.

An incentive to start class on time

Grading - Tests



- 3 tests, 30 points each
- Tests are timed. 😞
- A practice test will be made available a week before the actual test. 😊
- Test 1 and 2 will be held during the last hour of class on the days shown on the Calendar.
- Working students have the option to take test 1 and test 2 later in the day but they must be completed no later than 11:59PM (Opus time) on the day of the test.
- Test 3 is the final exam and is mandatory. The time of the final exam is shown on the Calendar.
- Tests are open notes, open book, and open computer.
- **Students may not give or ask others for assistance while taking a test.**
- Tests may be taken remotely online.

Timed tests are more difficult due to the time pressure! They do help me understand what you have learned so I can adjust the course as needed.

If you get anxious, freeze up, or your mind just doesn't work on timed tests then come see me. I'll be happy to work with you on how to successfully take them.

Grading - Forum Posts

- 4 points per post, up to 20 points maximum per "posting quarter".
- The end date for each posting quarter is shown on the course calendar.
- The posts for the quarter will be due at **11:59PM** (Opus time) on the date shown on the course Calendar.
- Extra posts in one quarter do not carry over to the next quarter.
- Only posts in the CIS 90 class forum will be counted.

As far as earning points, forum posts are "low hanging fruit" !!

Grading - Extra Credit

- Up to 90 points
- You need to attend to a family emergency and can't turn in a lab assignment on time ... don't worry!
- Your schedule/commute doesn't allow you to take any of the "first minute" quizzes don't worry!
- You get anxious, panic and forget everything you know on a test ... don't worry!
- You just don't like making forum posts ... don't worry!

There are ample extra credit opportunities which provide you with the flexibility to get the grade you want.

There is a cap on extra credit points so plan carefully!

Making the fine print LARGE (and red)

Please remember:

- 1) **No makeup's** for missed quizzes
- 2) Quiz answers in the **wrong order** or not emailed **in the first few minutes will not be accepted**
- 3) **Late work will not be accepted.** For example, a lab assignment due at 11:59PM will get no credit if turned in **one minute late** at 12:00AM (midnight) the next day

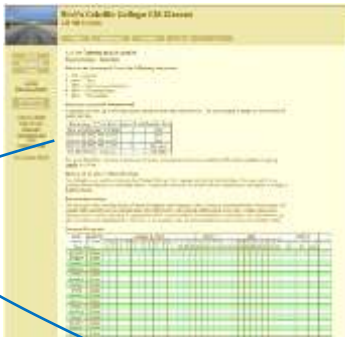
Tip: if you have not completed a lab assignment, **please turn in what you have done for partial credit.**

Don't panic though -- there are ample extra credit opportunities for students wanting or needing any extra points.

Final word on Grading

- You control your grade for this course!
- Use the **Grades** web page to plan for the grade you wish to receive and track your progress.
- Use the **Calendar** web page to see due dates for ALL lab assignments, extra credit labs and forum posts. See when EVERY quiz and test is scheduled.

Grades



Calendar



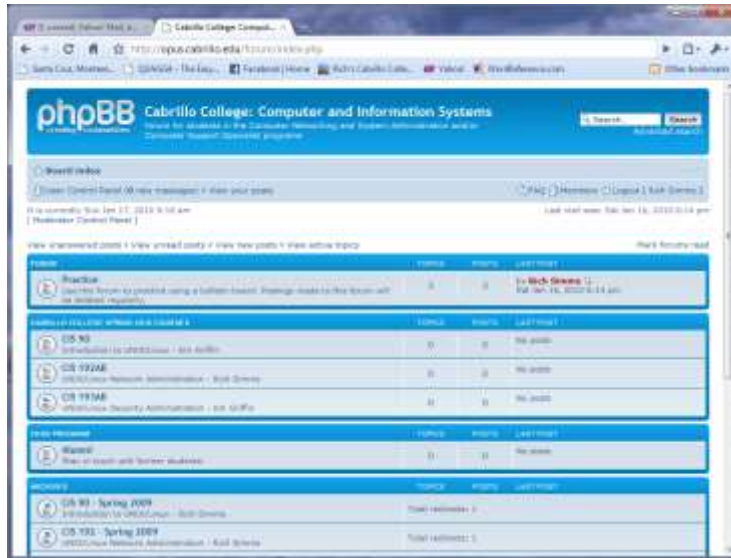
Percentage	Total Points	Letter Grade	Pass/No Pass
90% or higher	504 or higher	A	Pass
80% to 89.9%	448 to 503	B	Pass
70% to 79.9%	392 to 447	C	Pass
60% to 69.9%	336 to 391	D	No pass
0% to 59.9%	0 to 335	F	No pass

At the end of the course the instructor will count the number of points you have earned and use this table on the Grades web page to determine your grade.



Help Forum

Online Help Forum



- Post questions and answers
- Get clarifications on assignments
- Collaborate with classmates on assignments, quizzes and practice tests.
- Share UNIX/Linux information and ideas
- Post class notes for classmates who miss class
- Please don't post passwords!



As an incentive to use the forum - students can earn 4 points per CIS 90 forum post (capped at 20 points for each posting period)

Class Forum

Textbook

POSTREPLY ↩

Search this topic...

Search

3 posts • Page 1 of 1

Textbook

by Benji Simms on Thu May 15, 2008 2:57 pm

What is the textbook for this course? I want to get it ahead of time and start reading through it.

- Usernames cannot be anonymous and must be:
 - Your real **first** and **last name** separated by a **space** e.g. Rich Simms
 - During activation if your username matches a name on the roster, but is not your full first and last name **it will be modified** to be so.
 - During activation if your username does not match a name on roster **it gets deleted**.
- Uploading an avatar is optional. Identifying photos are preferred so students can get to know each other.



Benji Simms

Posts: 5
Joined: Thu May 15, 2008 2:40 pm



Rich Simms
Site Admin

Posts: 340
Joined: Thu May 15, 2008 1:44 pm



Benji Simms

Posts: 5
Joined: Thu May 15, 2008 2:40 pm

Class Activity Forum Registration

Click the Forums link on
<http://simms-teach.com>

Rich's Cabrillo College CIS Classes
CIS 90 Calendar

Home Resources **Forums** CIS Lab Canvas

Computer and Information Systems
Computer Networking and System Administration and/or list programs

Search... Search Advanced search

FAQ **Register** Login

It is currently Sun Jan 17, 2010 9:43 am

To Register:

1. Browse to the forum
2. Click on  Register
3. Review and agree to terms
4. Your **Username** must:
 - be your **first and last name separated by a space**
 - e.g. Benji Simms
 - match a name on the class roster

Note: If you have already registered for a previous CIS course you don't need to do it again.

Note: All registrations are manually approved by the instructor. If your username is incomplete or does not match a name of the class roster it will be modified or deleted.

Class Forum

Subscribe to the forum to get email notifications of new posts

After logging in:

1. Go to the CIS90 class forum.
2. Click the "Subscribe forum" box at the lower left. When subscribed you get email notifications when new posts are made.
3. To unsubscribe, click it again.



Board index



Subscribe forum

*Unsubscribed
looks like this*



Board index



Unsubscribe forum

*Subscribed
looks like this*



Lab Resources

The CIS 90 System Playground

Configured for
Command Line Only



Opus



Sun-Hwa-XX servers for tests

Other UNIX/Linux servers



Configured for
Graphics and Command Line

Arya-01

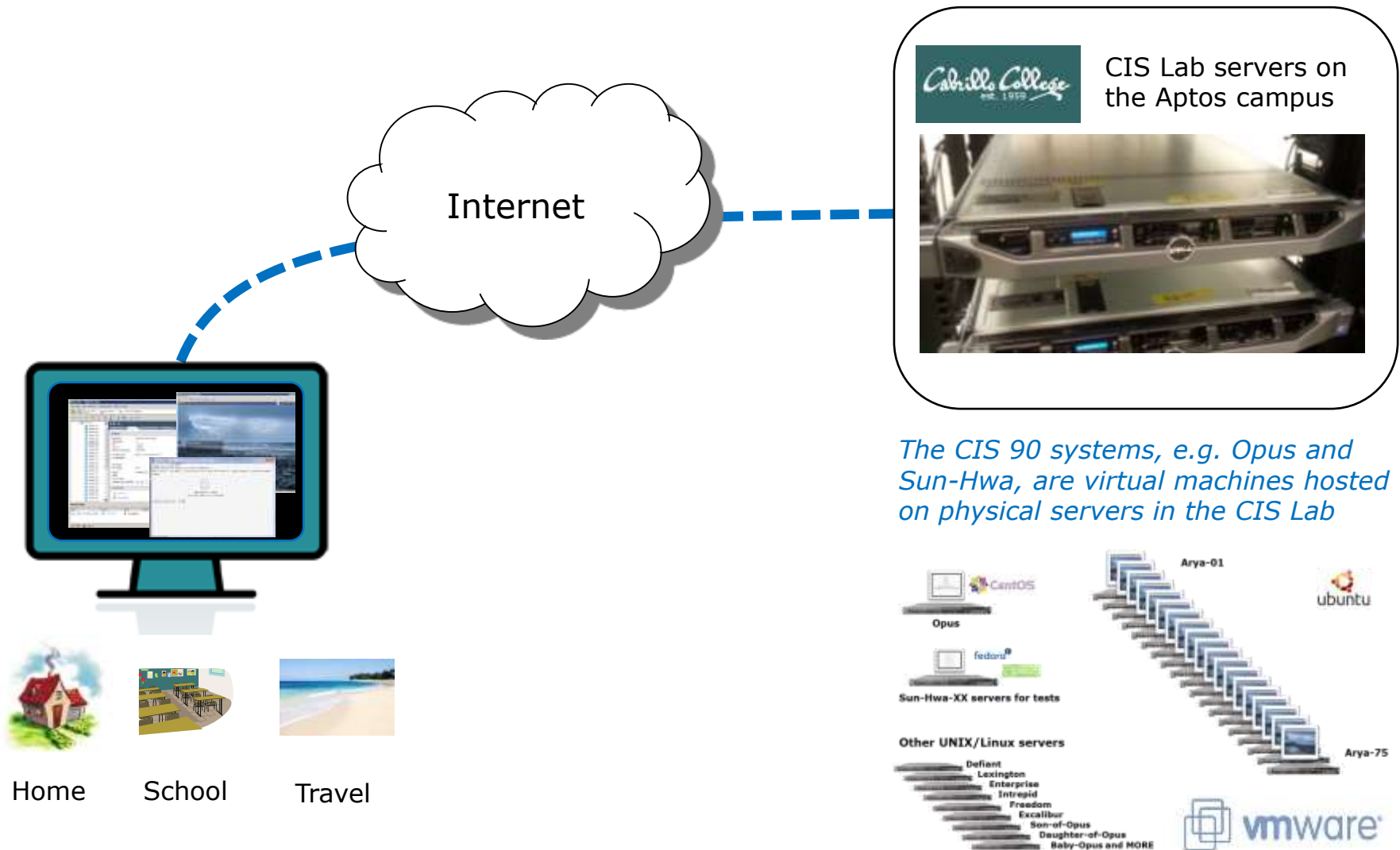


*Each student gets their
own Arya VM for the term*

Arya-75

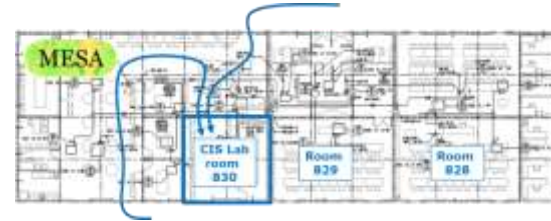
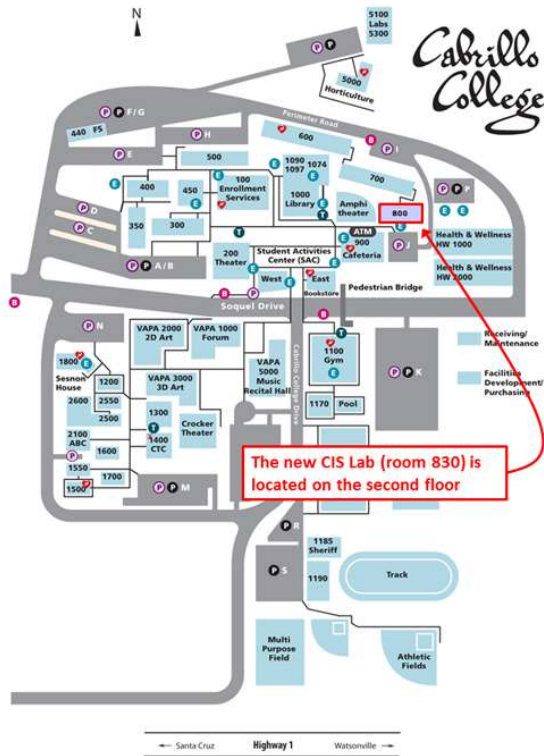
*All the systems are virtual machines
(VMs) running on the CIS Lab servers.
They are available from on or off-campus*

Option 1: Work on assignments online from anywhere



Option 2: Work on assignments in the CIS Lab

Building 800 - Room 830 (in MESA)



Instructors, lab assistants and equipment are available CIS students.

Great place to collaborate with classmates and a place for study groups to meet.

Use this link to see the schedule and location

The CIS 90 System Playground



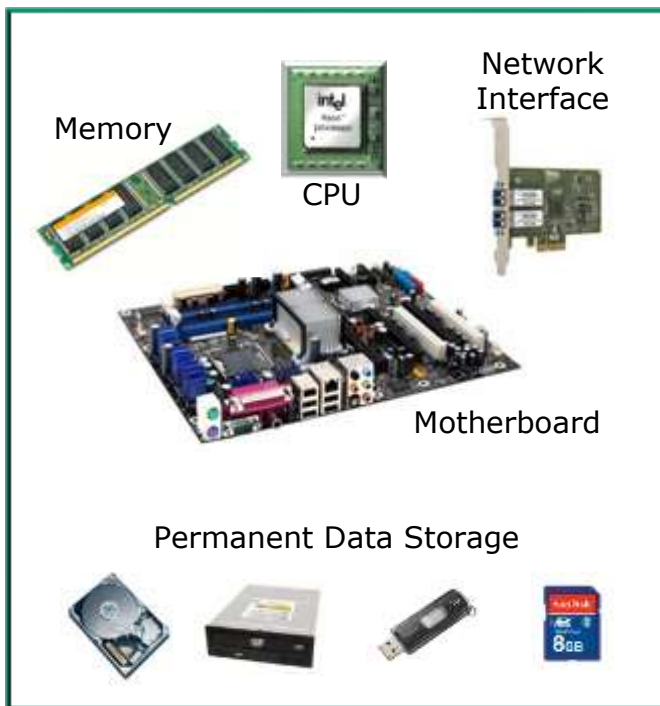
My micro lab on my desk at home. Watch the forum for an extra credit activity using this tiny lab.

Computers

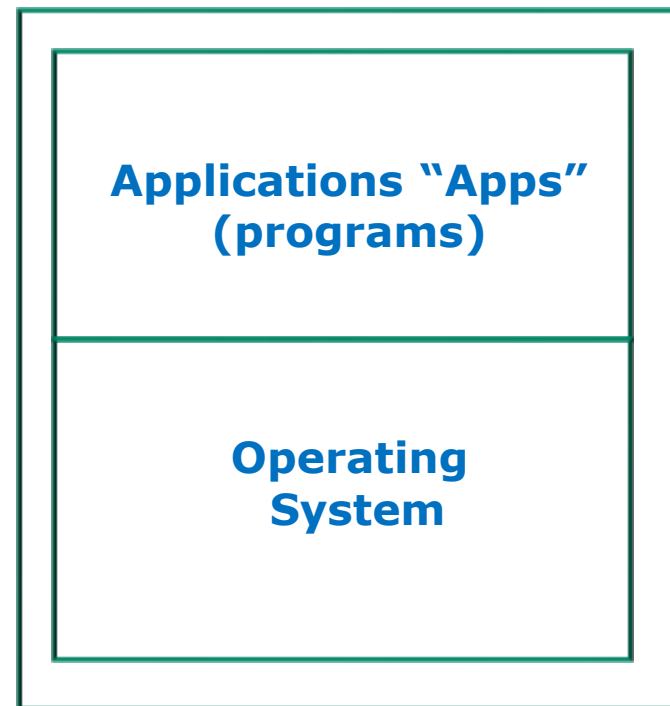
What is a computer?



Hardware



Software



At a high level all computers have the same basic hardware and software components

Hardware



Computer hardware has many form factors



smart
phone



tablet



Raspberry Pi



desktop



mobile
"laptop"



blade
server



"heavy iron"
server



Virtual
Machine



supercomputer



"pizza box" 1U
rack server



smart watch

Computers come in a wide variety of form factors



App Store



Norton
from symantec



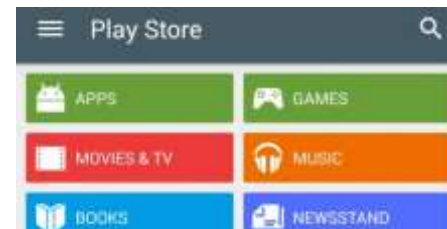
Software



ORACLE



McAfee



Software can be divided into programs (apps) and operating systems

Users



Applications "Apps" (programs)

- Interface to users via graphics (GUI) or command line (CLI)
- Use the OS for all access to hardware resources

Examples: word processors, spreadsheets, smartphone apps, web servers, compilers, games, email, web browsers, media players, databases, CAD/CAM, contact management, anti-virus, accounting, enterprise applications, custom software, and millions more!

Operating System (OS)

- Shares hardware resources
- Loads and executes programs
- Manages processes (running programs)
- Manages memory
- Manages the file system
- Provides input/output services
- Monitors the system
- Network stack services

Examples: Windows, Mac, Linux, Unix

Hardware



Software Licensing

Public Domain (paid for by the taxpayer)

- Source code is available
- No license, no copyright, maybe modified and redistributed
- Examples: USGS mapping software, NASA aerodynamics software

Open Source

- See: <http://opensource.org>
- Source code is available
- Community of developers doing online collaboration
- Pragmatic redistribution licenses
- Examples: Apache, Firefox, Android, OpenOffice, OpenBSD, LibreOffice

Free Software Foundation

- See: <https://www.fsf.org>
- Source code is available
- GNU ("GNU is not UNIX") General Public License, COPyleft
- Examples: GNU/Linux, gimp, emacs, nano, gcc, zebra, Files

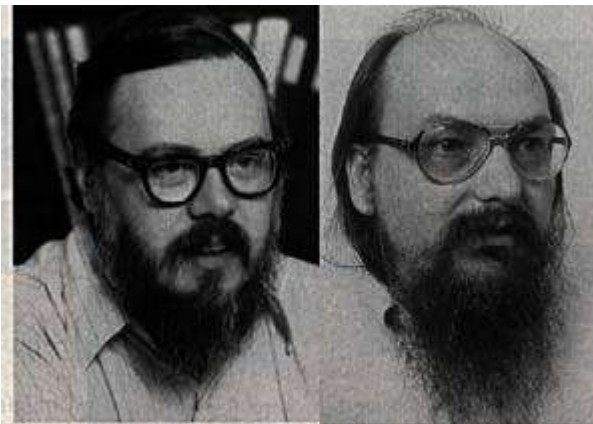
Proprietary (closed source)

- Source code is not available
- Considered intellectual property
- Must be licensed to use
- Examples: Adobe Photoshop, Microsoft Windows, Mac OS X, AT&T UNIX System V, Cisco IOS

UNIX/Linux overview

In 1971 Ken Thompson and Dennis Ritchie developed Unix at AT&T's Bell Labs

In 1971 Ken Thompson and Dennis Ritchie developed Unix at AT&T's Bell Labs



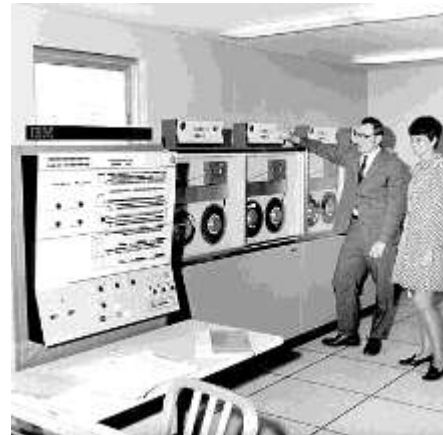
Dennis Ritchie and Kenneth Thompson: they set the style for software development – and for software developers



Bell Laboratories



**Isn't UNIX/Linux an antique
Operating System dating back to the
early 70's that belongs in a museum?**



Heck NO !!

UNIX/Linux is widely used, constantly improved and growing fast!

- Cloud infrastructure – Amazon AWS, OpenStack, etc.
- Embedded in smartphones, tablets and many other appliances.
- Internet services - Web, DNS, DHCP, Net News, Mail, etc.
- Enterprise and mission critical applications - Large databases, Enterprise Resource Management (ERM), Customer Relationship Management (CRM), data warehouse, manufacturing, supply chain management, etc.
- Hollywood - feature animation, visual effects, rendering farms.
- Number-crunching super computers for research.
- Businesses like Amazon, Paypal, Facebook, NYSE, Google, Home Depot run their businesses on UNIX/Linux

UNIX/Linux Overview

Supplemental



Businesses and organizations that run on Linux



Internet service providers use UNIX/Linux to provide web, DNS, DHCP, Mail, etc. services to their customers.



Film Studios



Film studios like DreamWorks have huge Linux "rendering farms" to produce the animation and special effects



Televisions

The Open-Source Car

Summary: Toyota is joining the Linux Foundation.



By Steven J. Vaughan-Nichols for Linux and Open Source |
July 5, 2011 -- 10:13 GMT (03:13 PDT)

Follow @sjvn

Besides a V6 as your engine, your car is very likely to soon be running Linux under the hood. The Linux Foundation will be announcing today that Toyota is joining the Foundation.

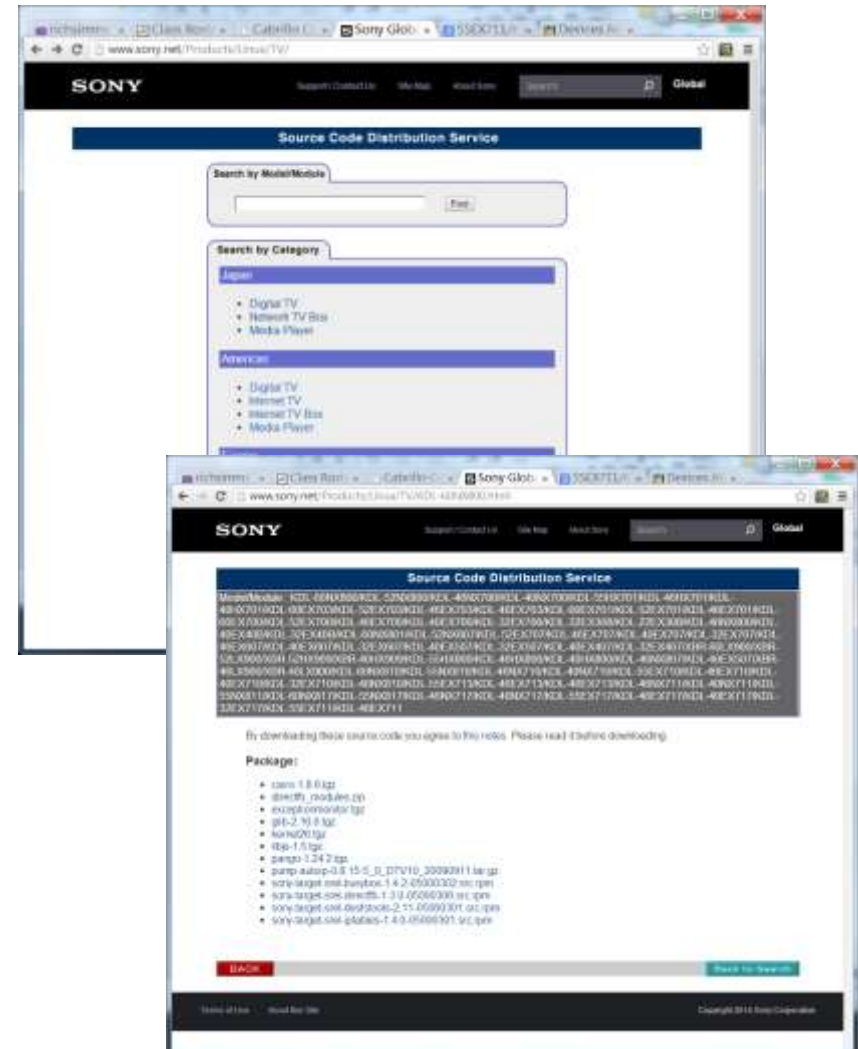


Some of you may be wondering, "What the heck is a car company doing joining the Linux Foundation?" The answer is easy. As the Foundation puts it, "A major shift is underway in the automotive industry. Car-makers are using new technologies to deliver on consumer expectations for the same connectivity in their cars as they've come to expect in their homes and offices. From dashboard computing to In-Vehicle-Infotainment (IVI), automobiles are becoming the latest wireless devices - on wheels."

And, what's one of the most popular systems for dashboard computing, heads-up driving displays and IVI? It's Linux, of course.

< snipped >

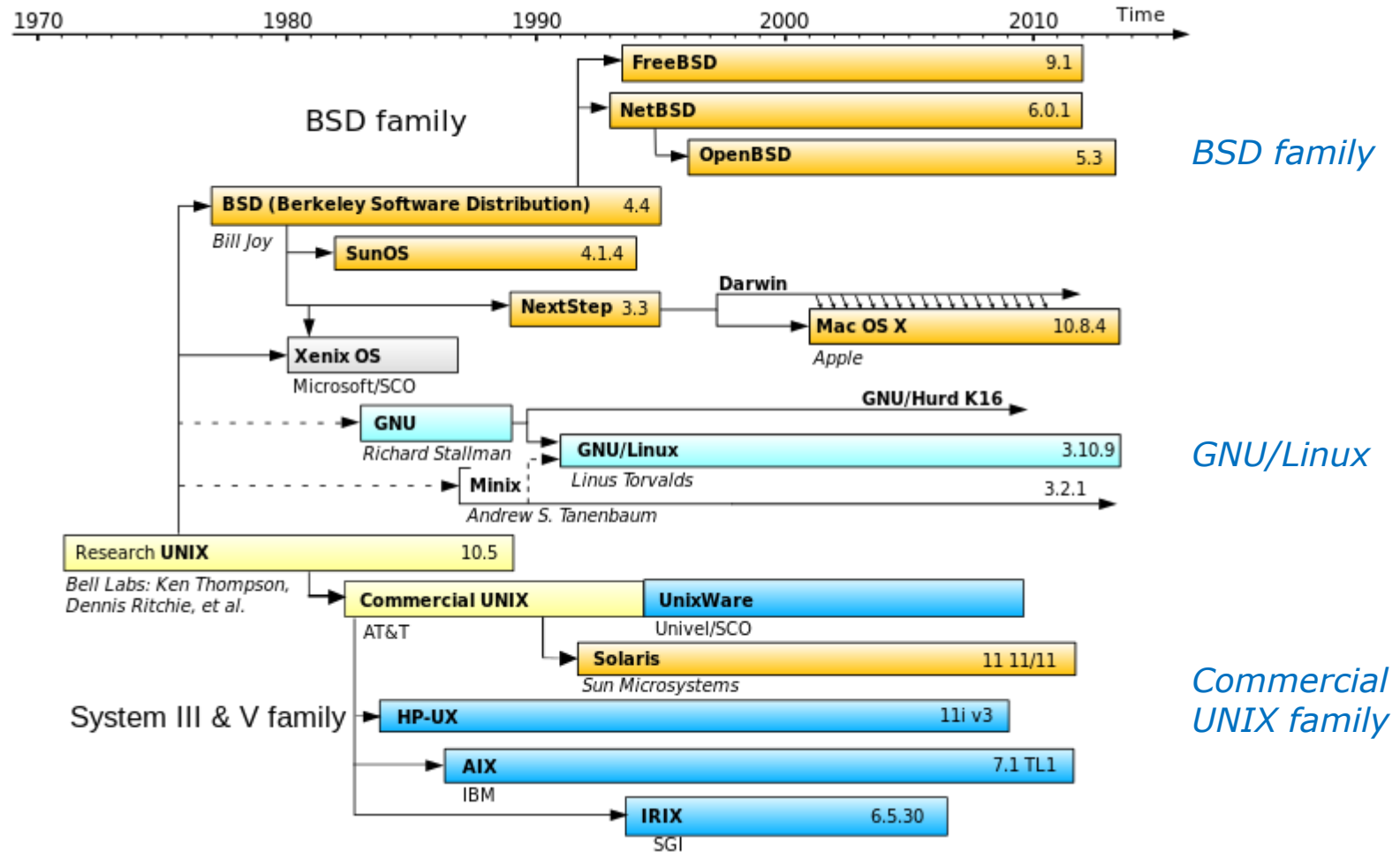
<http://www.zdnet.com/blog/open-source/the-open-source-car/9193>



<http://www.sony.net/Products/Linux/common/search.html>

A close-up photograph of tree bark, showing a complex texture of cracks and ridges. The bark is covered with patches of bright orange lichen and greyish-white lichen, creating a mottled appearance. The lighting highlights the rough, uneven surface of the bark.

Unix family trees



It all started at Bell Labs

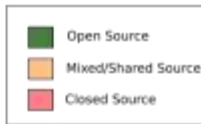
BSD family

GNU/Linux

Commercial UNIX family

Unix family Trees

Supplemental

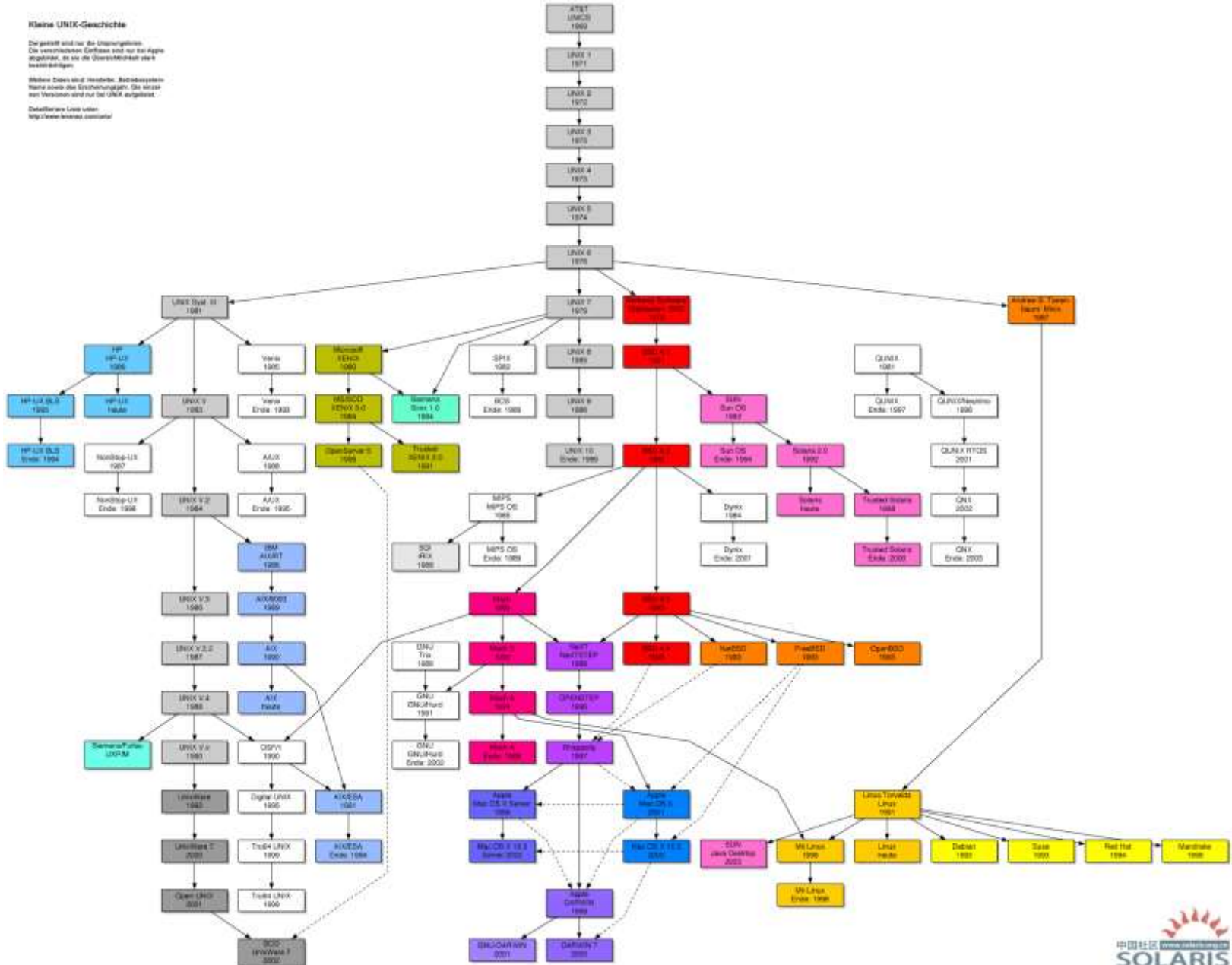


Kleine UNIX-Geschichte

Die gestrichelten Linien sind nur die Ursprungslinien.
Die verschiedenen Linien sind nur zur Abgrenzung, da sie die Übersichtlichkeit stark beeinträchtigen.

Während Daten nicht vorhanden, Betriebssysteme
heute sowie die Entwicklungsgeschichte. Die meisten
von Versionen sind nur bei UNIX aufgelistet.

Detaillierte Liste unter:
<http://www.bell.com/unix/>



www.levenez.com/unix/

Unix History

Unix Timeline

Below, you can see the preview of the **Unix History** (move on the white zone to get a bigger image):

This is a simplified diagram of unix history. There are numerous derivative systems not listed in this chart, maybe 10 times more! In the recent past, many electronic companies had their own unix releases. This diagram is only the tip of an iceberg, with a penguin on it ;-).

System	Version	Release Date
Oracle Solaris	11.1	october 4, 2012
Android	4.1.1 Jelly Bean	july 9, 2012
Android	4.1.2	oct. 9, 2012
Android	4.2	oct. 29, 2012
Android	4.2.1	november 27, 2012
Linux	3.5	july 21, 2012
Linux	3.6	september 30, 2012
Linux	3.7	december 10, 2012

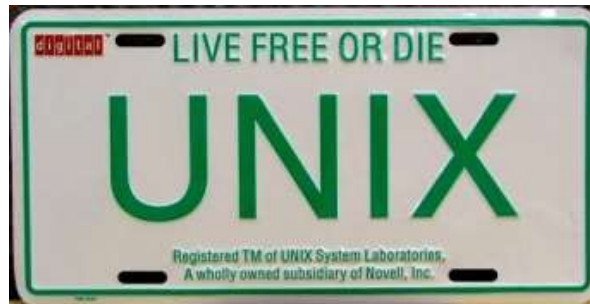
www.levenez.com/unix/redirect_unix_a4_pdf.html

UNIX

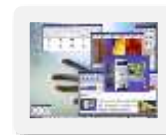
Commercial UNIX

The commercial "UNIX" descendants

The UNIX trademark is owned and managed by The Open Group on behalf of the industry to signify products that are certified to conform to the Single UNIX Specification.



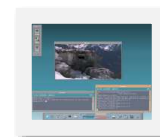
SCO UNIX
PC servers



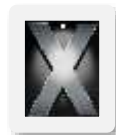
Sun Solaris
Servers and workstations



IBM AIX
Servers, mainframes and
workstations



HP HP-UX
Servers and workstations



Apple OS X
Mac computers

BSD

Berkeley

Software

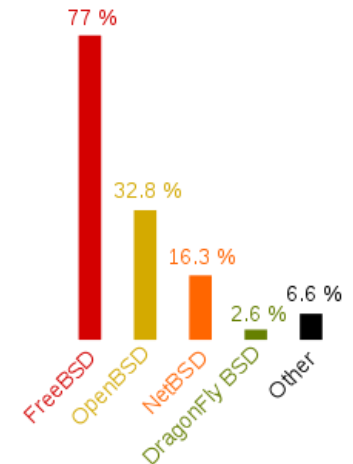
Distribution

BSD Unix and its "UNIX-like" Descendants

UC Berkeley had a source license from AT&T so they could make their own modifications and additions like TCP/IP which enabled Unix for the Internet. BSD Unix was very popular with university and government users.



Because the original BSD Unix was based on ATT's UNIX code it had to be re-written from scratch so it could be distributed freely as open source. These "UNIX-like" descendants are not allowed to use the UNIX trademark.



Source: <http://en.wikipedia.org/wiki/OpenBSD>

Apple iOS



The Apple iOS, internally known as Darwin, like Mac OS X, runs on a Unix-like kernel (Mach kernel + BSD components)

Sources: [http://en.wikipedia.org/wiki/Darwin_\(operating_system\)](http://en.wikipedia.org/wiki/Darwin_(operating_system))
[http://en.wikipedia.org/wiki/IOS_\(Apple\)](http://en.wikipedia.org/wiki/IOS_(Apple))

GNU/Linux

GNU is Not Unix

GNU/Linux



Shells
System commands
Utilities
Libraries
Much more ...



Richard Stallman started the GNU project in 1983 to create a free UNIX-like OS. He founded the Free Software Foundation in 1985. In 1989 he wrote the first version of the GNU General Public License



Kernel



Linus Torvalds, as a student, initially conceived and assembled the Linux kernel in 1991. The kernel was later re-licensed under the GNU General Public License in 1992.

Various GNU/Linux "Distros" (Distributions)

Red Hat Enterprise Linux



CentOS



Fedora



OpenSUSE



Debian



Ubuntu



Mint



Mageia



*Note: A distribution is built by a company or organization. They start with the **Linux kernel** then add a custom mix of open source components. They may then add some of their own unique software to differentiate their distribution.*



Tux, the penguin, is the Linux kernel mascot

iso.linuxquestions.org

15 Most Popular Linux Distro Downloads

15 Most Downloaded Distribution Versions (last 30 Days)	 15 Most Downloaded Distributions (Ever)
1. BackTrack 5 R3 (563598)	1. Fedora
2. CentOS 6.5 (24485)	2. Red Hat Enterprise Linux
3. Linux Mint 17.1 (10509)	3. Mandriva
4. Fedora 20 (7214)	4. Ubuntu
5. Wifislax 4.9 (6778)	5. SUSE
6. Puppy Linux 6.0 "Tahrpup" (4429)	6. CentOS
7. CentOS 7.0-1406 (4029)	7. Damn Small Linux
8. KNOPPIX 7.4.2 (3455)	8. Knoppix
9. linuX-gamers Live 0.9.7 (2675)	9. BackTrack
10. FreeBSD 9.3 (2312)	10. Debian
11. Puppy Linux 4.3.1 (1912)	11. Slackware
12. Ubuntu 12.04.4 (1584)	12. Linux Mint
13. Damn Small Linux 4.4.10 (1207)	13. PCLinuxOS
14. Xubuntu 14.04.1 (1052)	14. Puppy Linux
15. Zorin OS 6 "Lite" (968)	15. MEPIS

Jan 21, 2015

There are hundreds of Linux distributions. The one thing they have in common is they all use the Linux kernel.

Embedded Linux (just a few)



Katana
Robotic Arm



Erle-Copter
drone



Amazon
Kindle



Stir smart desk



Asus RT-AC66U
wireless router



Tivo



Yamaha Disklavier
Mark IV



Android
Cell Phones



Some TomTom
GPS models



Garmin
Nuvi 5000



Buffalo
NAS storage



Virgin America
Personal
Entertainment



TripBPX
Phone
System



MikroTik
Routers



Sony TVs



Android Tablets



Raspberry Pi



Polycom
VOIP
Phone



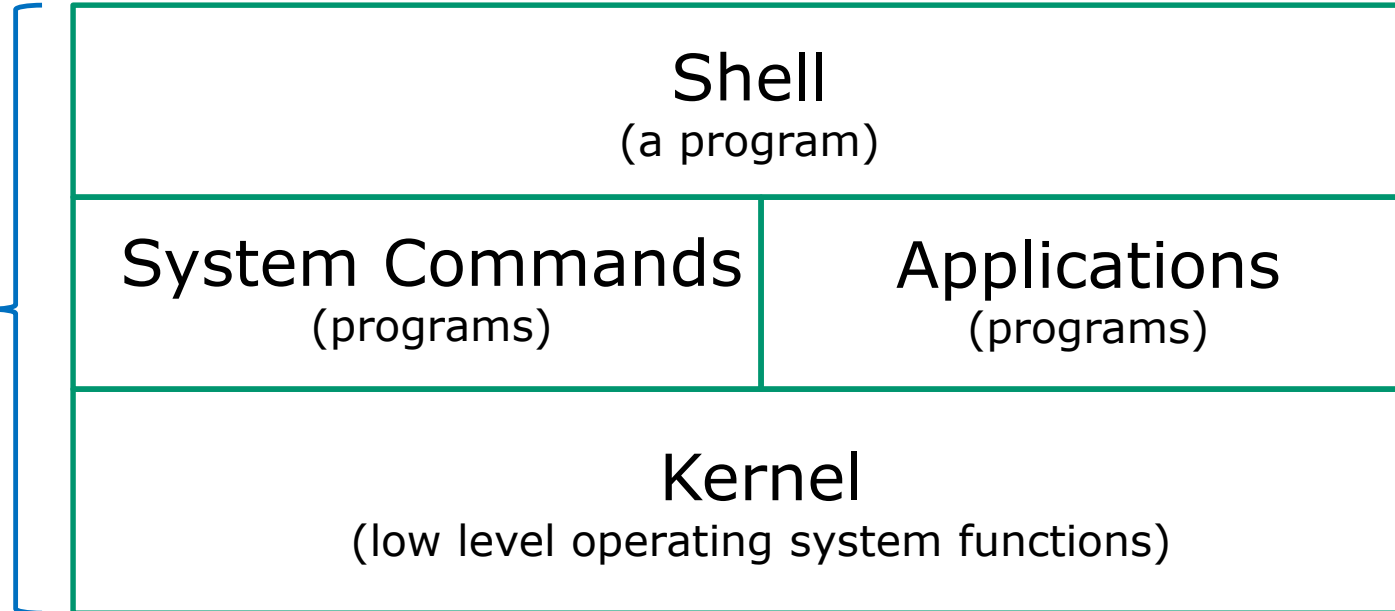
Unix/Linux Architecture simplified

UNIX/Linux Architecture Simplified View

Users



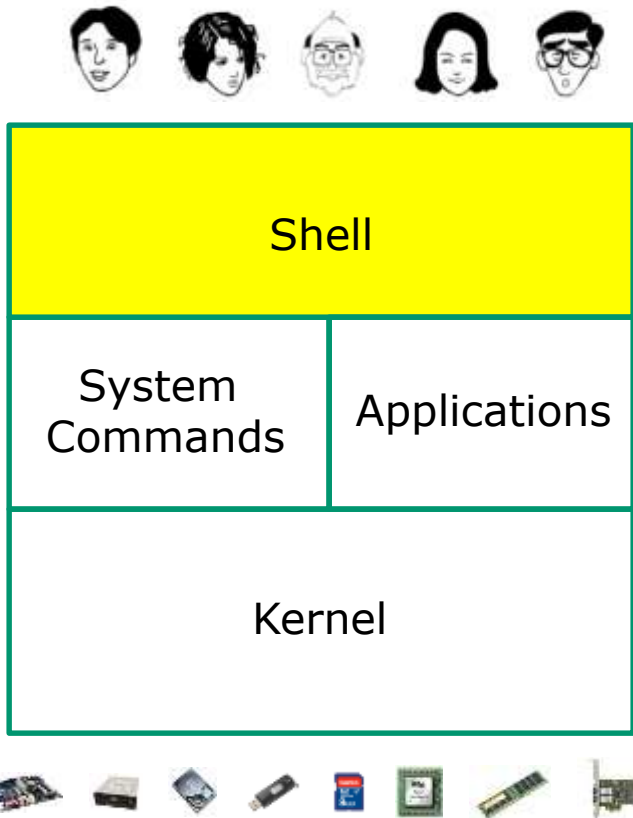
Software



Hardware

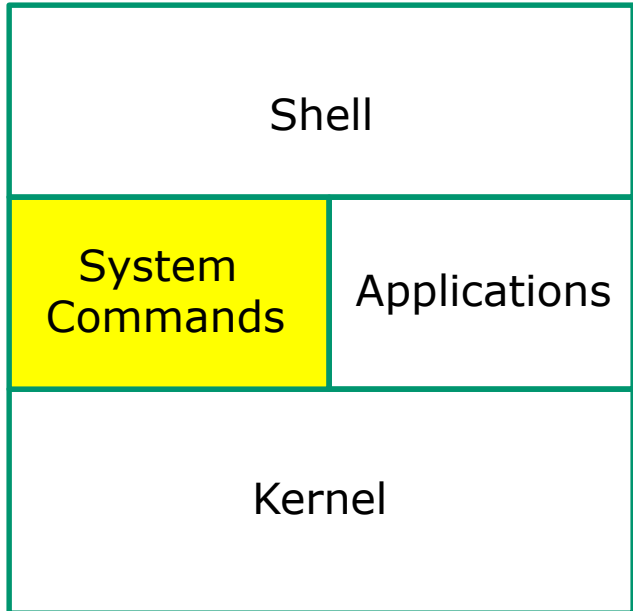


The Shell (Command Line)



- Allows users to interact with the computer
- Called a "shell" because it hides the underlying operating system.
- Prompts user for a command, parses the command, then locates the command (a program or script) and runs it.
- Many shell programs are available: sh (Bourne shell), bash (Bourne Again shell), csh (C shell), ksh (Korn shell).
- The shell is a user interface and a programming language (scripts).
- GNOME and KDE desktops could be called graphical shells.

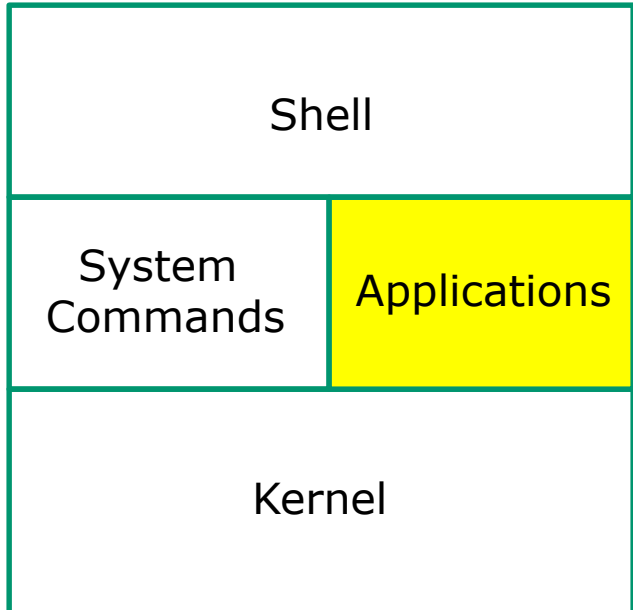
System Commands



- 100's of system commands and utilities.
- We will learn how to use the following commands in this lesson:
 - cal
 - clear
 - date
 - exit
 - hostname
 - id
 - ps
 - ssh
 - tty
 - uname

UNIX/Linux Architecture

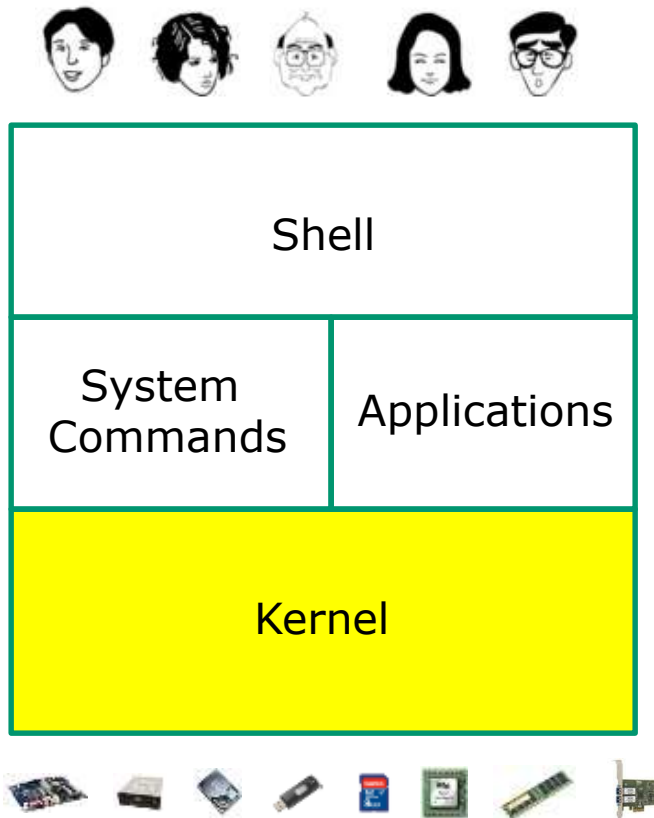
Applications



- Could be included in the distribution or optionally installed.
- Could be an add-on program developed by an ISV (Independent Software Vendor) or Open Source organization.
- Could be an in-house developed custom application.
- Examples are **Apache** (web server), **GIMP** (GNU image manipulation program), **OpenOffice** (word processing, spreadsheets, presentations), **Oracle** (commercial database), ... etc.



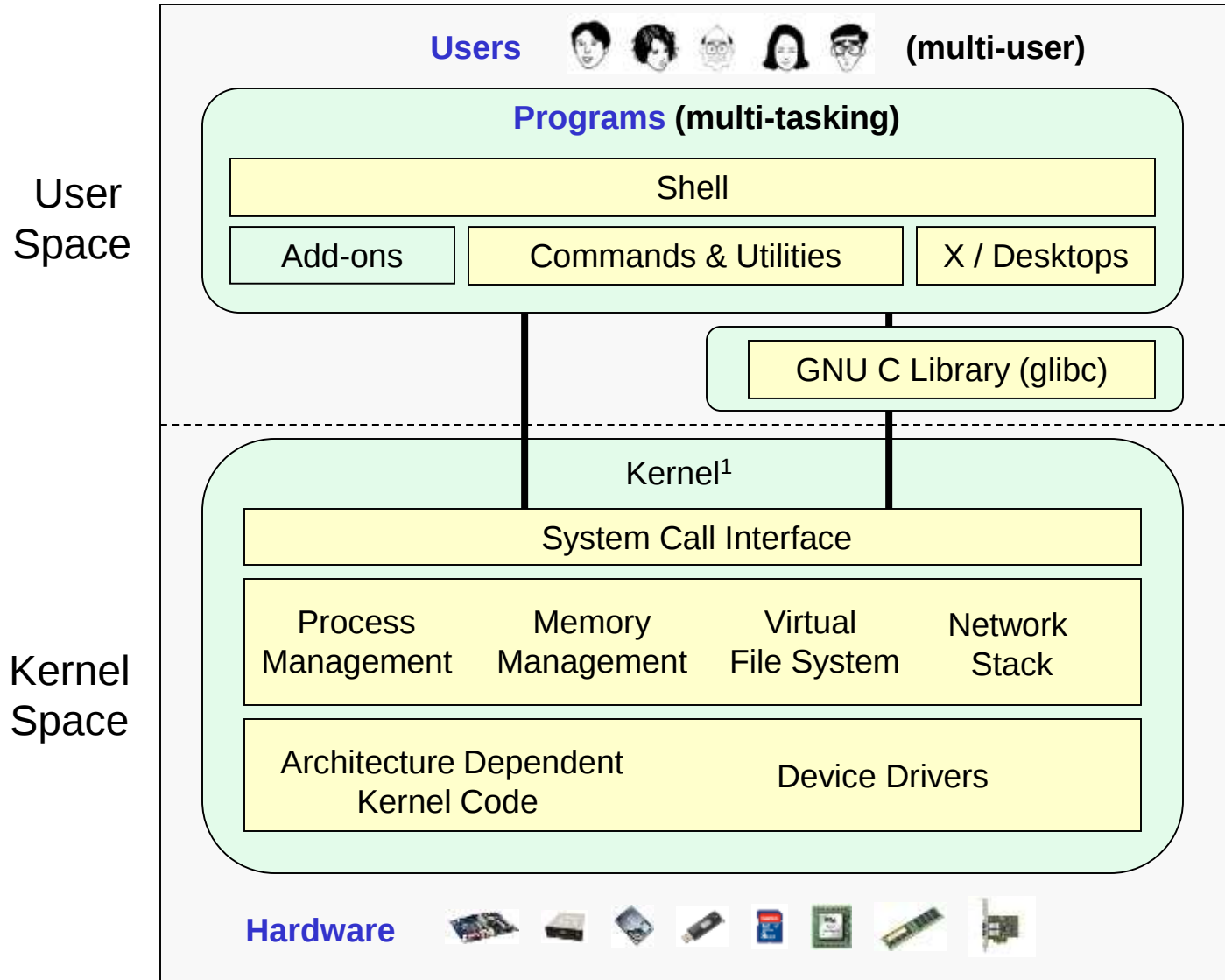
The Kernel



- Lowest level, inner-most core of the operating system.
 - Process management - what programs are called when they are loaded and running.
 - Memory management - handles all the reads and writes to memory (RAM and virtual memory).
 - File System - handle all the reads and writes to files on drives.
 - Network stack - provides the communication layers to exchange packets with other computers.



GNU/Linux Operating System Architecture



Richard Stallman started the GNU project in 1983 to create a free UNIX-like OS. He Founded the Free Software Foundation in 1985. In 1989 he wrote the first version of the GNU General Public License



Linus Torvalds, as a student, initially conceived and assembled the Linux kernel in 1991. The kernel was later re-licensed under the GNU General Public License in 1992.

¹See "Anatomy of the Linux kernel" by M. Tim Jones at <http://www-128.ibm.com/developerworks/linux/library/l-linux-kernel/>



UNIX/Linux Design “Observations”

- Multi-tasking and multi-user capabilities
- Unlike Windows, the GUI does not run in the kernel (adds stability)
- Unlike Windows, multiple graphical desktops available
- Linux kernel is “monolithic”, not a modular “microkernel”
- Dynamic - can load and unload modules on the fly
- Programs restricted to the privileges of the user running them (more secure)
- Scalable - scales up to handle the largest enterprise and mission-critical applications
- Portable - runs on a variety of hardware platforms
- Reliable and robust
- Powerful, **but NOT friendly !!**



Market Share



Worldwide Server Market

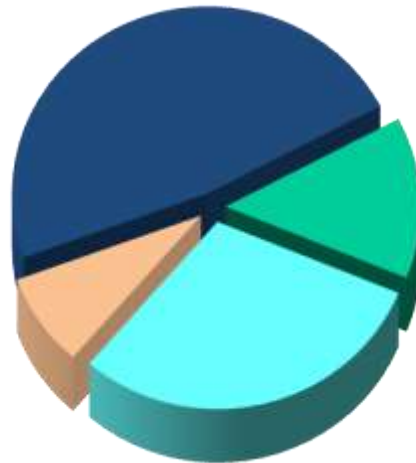
Needs Update



\$14.2 Billion Server Revenue Q4 2013

Year over Year Change

Windows
\$6.5B
(45.7%)



Other
\$1.1B
(8.0%)

Linux
\$4.1B
(28.5%)

Unix
\$1.9B
(13.6%)

Linux

+14.4%

Unix

-20.2

Windows

+0.1%

Source: IDC, 26 Feb 2014

Website hits by browser OS

Jul 2010¹

Operating Systems		
1	Windows XP	48.17%
2	Windows 7	17.02%
3	Windows Vista	16.60%
4	Mac OS X	4.84%
5	Linux	1.45%
6	Windows 2003	1.02%
7	iPhone OSX	0.56%
8	Windows 2000	0.31%
9	WAP	0.12%
10	Android	0.08%

6.9%

Jan 2013²

Operating Systems		
1	Windows 7	44.13%
2	Windows XP	23.70%
3	iOS	8.79%
4	Apple OS X	8.52%
5	Windows Vista	5.48%
6	Android	3.75%
7	Windows 8	2.28%
8	Linux	1.74%
9	BlackBerry	0.61%
10	SymbianOS	0.23%

22.8%

Dec 2015³

Operating Systems		
1	Windows 7	28.27%
2	iOS 9	12.21%
3	Android 4	11.54%
4	Android 5	7.08%
5	Windows 10	7.07%
6	Mac OS X	6.72%
7	Windows 8.1	6.48%
8	Windows XP	4.50%
9	iOS 8	3.66%
10	Linux	2.62%

43.6%

1-This report was generated 07/31/2010 based on the last 15,000 page views to each website tracked by W3Counter. W3Counter's sample currently includes 38,996 websites. The browser market share graph includes data from all versions of the named browser families, not only the top 10 as listed below.

2-This report was generated 01/31/2013 based on the last 15,000 page views to each website tracked by W3Counter. W3Counter's sample currently includes 63,187 websites. The browser market share graph includes data from all versions of the named browser families, not only the top 10 as listed below.

3-This report was generated 12/31/2015 based on visits to 37,520 websites that use W3Counter's free web stats. The browser market share graph includes data from all versions of the named browser families, not only the top 10 as listed below.



Smartphones

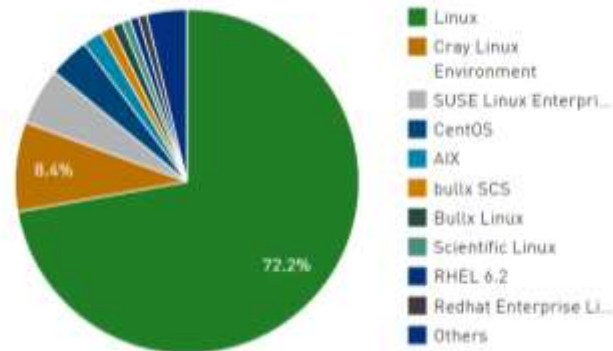


Worldwide Smartphone Sales to End Users by Operating System in 3Q15 (Thousands of Units)

Operating System	3Q15 Units	3Q15 Market Share (%)	3Q14 Units	3Q14 Market Share (%)
Android	298,797	84.7	254,354	83.3
iOS	46,062	13.1	38,187	12.5
Windows	5,874	1.7	9,033	3.0
BlackBerry	977	0.3	2,420	0.8
Others	1133.6	0.3	1,310.2	0.4
Total	352,844.0	100.0	305,384.0	100.0

Source: Gartner (November 2015)

Operating System Share (by system)
June 2015



Linux dominates the Supercomputer market



OPERATING SYSTEM	COUNT	SYSTEM SHARE (%)	RMAX (GFLOPS)	RPEAK (GFLOPS)	CORES
Linux	361	72.2	196,046,907	276,554,211	15,810,781
Cray Linux Environment	42	8.4	67,868,298	96,219,129	2,979,028
SUSE Linux Enterprise Server 11	27	5.4	26,411,555	35,584,946	1,047,904
CentOS	19	3.8	9,753,146	13,134,528	632,111
AIX	9	1.8	2,920,345	3,464,219	116,832
bulix SCS	6	1.2	2,709,920	3,497,976	129,168
Bulix Linux	5	1.0	3,358,042	4,299,887	125,672
Scientific Linux	4	0.8	1,688,004	2,007,590	77,608
RHEL 6.2	4	0.8	1,738,900	2,132,582	102,528
Redhat Enterprise Linux 6.4	4	0.8	3,668,262	5,040,438	132,410
Redhat Enterprise Linux 6.5	4	0.8	3,101,749	3,963,802	108,820
bulix SUpErCOmputer Suite A E 2.1	3	0.6	2,942,070	3,583,180	165,888
Kylin Linux	2	0.4	35,934,090	57,976,934	3,294,720
Redhat Enterprise Linux 6	2	0.4	2,433,470	3,032,783	295,656
CNL	1	0.2	165,600	201,216	20,960
Windows HPC 2008	1	0.2	180,600	233,472	30,720
CNK/SLES 9	1	0.2	190,900	222,822	65,536
Redhat Linux	1	0.2	196,234	262,560	8,412
Redhat Enterprise Linux 7	1	0.2	217,887	272,794	7,104
RHEL 6.1	1	0.2	230,600	340,915	37,056
SLES10 + SGI ProPack 5	1	0.2	237,800	267,878	23,040
Cell OS	1	0.2	658,112	829,338	19,936

Source: <http://www.top500.org/statistics/list/>



Tianhe-2
supercomputer
in China



Cray XK7
Titan at Oak
Ridge National
Lab



Sequoia, IBM
BlueGene/Q
at Lawrence
Livermore
Lab



Fujitsu K
computer in
Japan



Mira, IBM
BlueGene/Q
at Argonne
Lab

Logging in via ssh

SSH
(secure shell)



Getting the car keys

Remote Server

Problem: We need a secure (encrypted) way to login and enter commands to a remote server over the network.



Solution: SSH is a network protocol that enables secure connections between computers

Picture credit: <http://www.cs.umd.edu/faq/ssh.html>

Old way: **telnet**

Sniffer view of a Telnet session

```

server2 VMware Remote Console | Devices
root@ server2-01:~
telnet-session - Ethereal
Contents of TCP stream
login: rrsiiimmmssrr
Password: nimbus2000rr
Last login: Sun Jul 6 18:47:03 from 192.168.1.254r
[rsimms@server2-01 rsimms]$ ccaatt sseeccrreettrr
The D-Day invasion is set for June 6th at Normandyr
[rsimms@server2-01 rsimms]$ eexxiittrr
logoutr
z[H2[J
    
```

Telnet uses clear text

With telnet, everything is transferred in clear text over the network (not good!)

New way: **ssh**

Sniffer view of a SSH session

```

server2 VMware Remote Console | Devices
root@ server2-01:~
ssh-session - Ethereal
Contents of TCP stream
0000035E 1a 20 b1 b0 fa f3 03 2f 03 13 32 20 a3 32 b3 33 ...2..
000005AE 80 72 2b 72 d4 3b 46 a6 7b 67 6b d4 df a2 b2 8c ,r+r.;F.
000005BE 01 7c 39 78 bd c4 95 f2 61 93 73 a1 76 49 cf 00 ,l9x...
000005CE 68 c2 85 71 b0 75 c6 72 b5 18 27 10 4b 57 ed 88 h.,q.u.r
000005DE 17 df 2b a1 dd 81 4f 0a 58 51 f5 f7 54 3e cc 89 ,.+...0.
000005EE 55 70 e9 73 b4 0a 6f 3f af 5b f7 3c 4e 30 92 39 Up,s..o?
000005FE 62 fc fd a6 fd b9 45 e2 56 12 d1 90 0c d9 ce 34 b.....E.
0000060E 6d 1f 8b 44 a7 50 3c 59 aa 0b 2a c2 04 c1 da 43 m..D,P<Y
0000061E 21 87 2d 32 67 48 d3 47 2f 43 25 5b ee 65 89 76 l,-2gH,G
0000062E 83 1c 74 91 b1 f5 3e 8b 57 ee d9 fc f5 45 e3 b6 ,.t...>.
0000063E ef 9c f0 89 eb f7 1d c9 fd 29 69 44 a9 75 98 5a .....
0000064E b2 ba d5 62 9f 35 e1 1a ee 06 8b 79 fe e9 f0 0a ...b.5.
0000065E df
0000066E ea
0000067E 06
0000068E 8c 8f a3 07 6e 69 62 02 a7 3f e0 e1 9b ec af d0 ....nib.
    
```

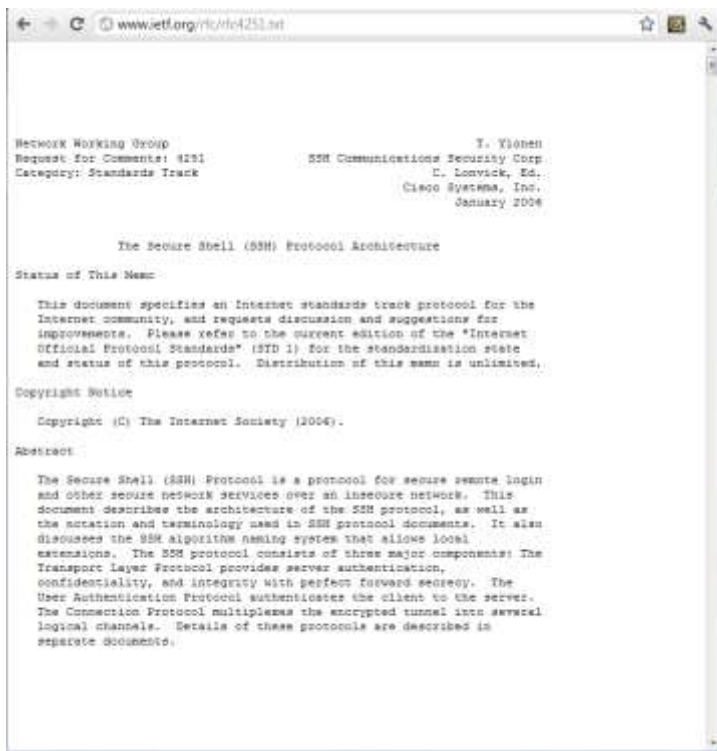
SSH is encrypted

With ssh, everything is encrypted. This is how we will access all UNIX/Linux systems in CIS 90.



Local computer at home or on campus

SSH (secure shell) is a standards based protocol. We will use it for remotely logging into and running commands on UNIX/Linux systems.



- See RFCs 4250 to 4254 at www.ietf.org for the gory details
- “RFC” = Request for Comment
- “IETF” = Internet Engineering Task Force

SSH apps may need to be installed

- ✓ Linux and Mac already have SSH built in (i.e. the **ssh** command)
- ❑ Android smartphones and tablets can use SSH apps such as the free **ConnectBot** or **Juice** apps
- ❑ Apple iPhones and iPads can use ssh apps such as the **iSSH** app
- ❑ Windows users can download and install the **Putty** program



Putty is written and maintained primarily by Simon Tatham.
<http://www.chiark.greenend.org.uk/~sgtatham/>
Thank you Simon!

Class Activity – Install SSH software if necessary

Operating System	 Students in the classroom	 Students at home
 Windows	 Find and run the Putty program	 - Google “putty download” - Download the <u>putty.exe</u> binary to your desktop - Run the downloaded putty.exe program http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html
  Linux or Mac		Search for and run the terminal app

First Login

A white sedan is parked in a desert landscape with red rock formations in the background. The driver-side door is open, and a Thule roof rack is mounted on the car's roof. The text "Get into the car" is overlaid in large white letters.

Get into the car

SSH connection to a UNIX/Linux Server

To connect and login to a remote system you must know:

- The **hostname or IP Address** of the remote server (hostnames must be *fully qualified domain names* when going over the Internet)
- The **port** number the SSH service is listening on (the default is port 22)
- Your login credentials (**username** and **password**) on the remote server

How people get into another home

<http://modernwarpoetry.com/wp-content/uploads/2014/09/Vertical-Siding-Brick-wall-white-house-with-a-big-house.jpg>

1) You need an address to find someone's home

2) Some doors are locked and some are open.
You can only enter if the door is open.

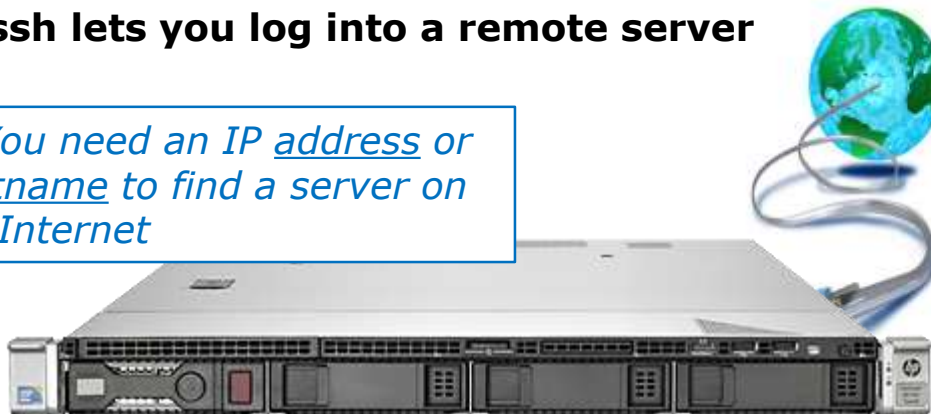


3) Homer owner: Who the heck are you?

4) Visitor: My name is Rich and I live next door in the small shack

How ssh lets you log into a remote server

1) You need an IP address or hostname to find a server on the Internet



<http://product-images.www8-hp.com/digmedialib/prodimg/lowres/c03120597.png>

2) Some ports are locked and some are open. You can only connect if the port is open.

3) Server: Enter username & password

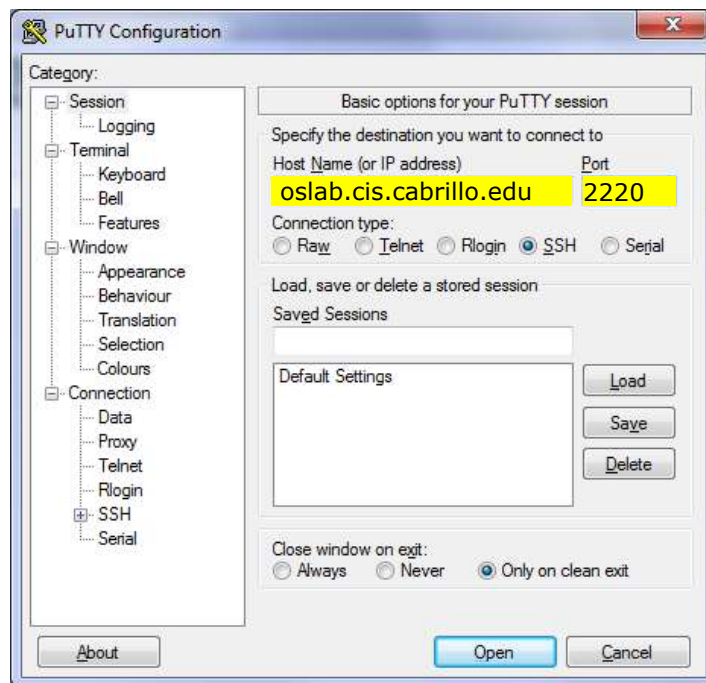
4) Visiting user: rsimms & <secret>

SSH connection to a UNIX/Linux Server - from Windows

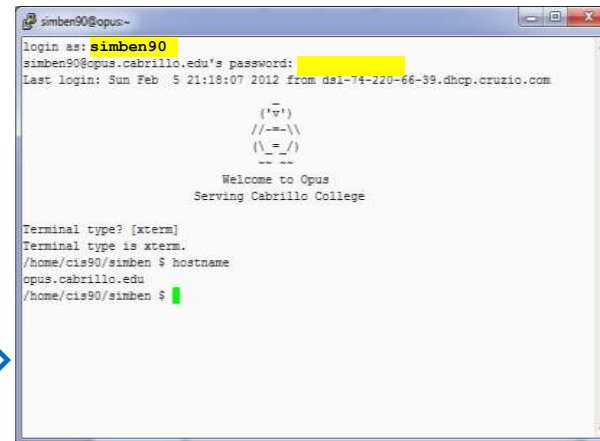
(specify hostname, username, password and port)



On Windows run Putty



Click Open



The password is not echoed (printed) as you type it

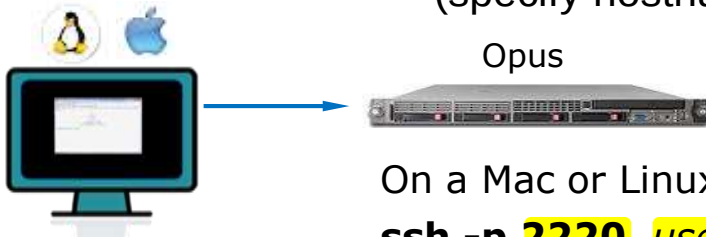


The first time a connection is made to a server this warning is displayed.

Click Yes

SSH connection to a UNIX/Linux Server - from Linux/Mac

(specify hostname, username, password and port)



On a Mac or Linux terminal type:

ssh -p 2220 *username*@oslab.cis.cabrillo.edu

The authenticity of host '[oslab.cis.cabrillo.edu]:2220
([2607:f380:80f:f425::230]:2220)' can't be established.
RSA key fingerprint is 7d:32:80:b9:52:32:c8:dc:3b:16:0e:ba:8c:fd:79:ef.
Are you sure you want to continue connecting (yes/no)? **yes**

```

simben90@oslab:~$ ssh -p 2220 simben90@oslab.cabrillo.edu
simben90@oslab.cabrillo.edu's password:
Last login: Tue Jan 29 16:07:08 2013 from 58-8-68-177.dsl.dynadic.fusionbroadband.com

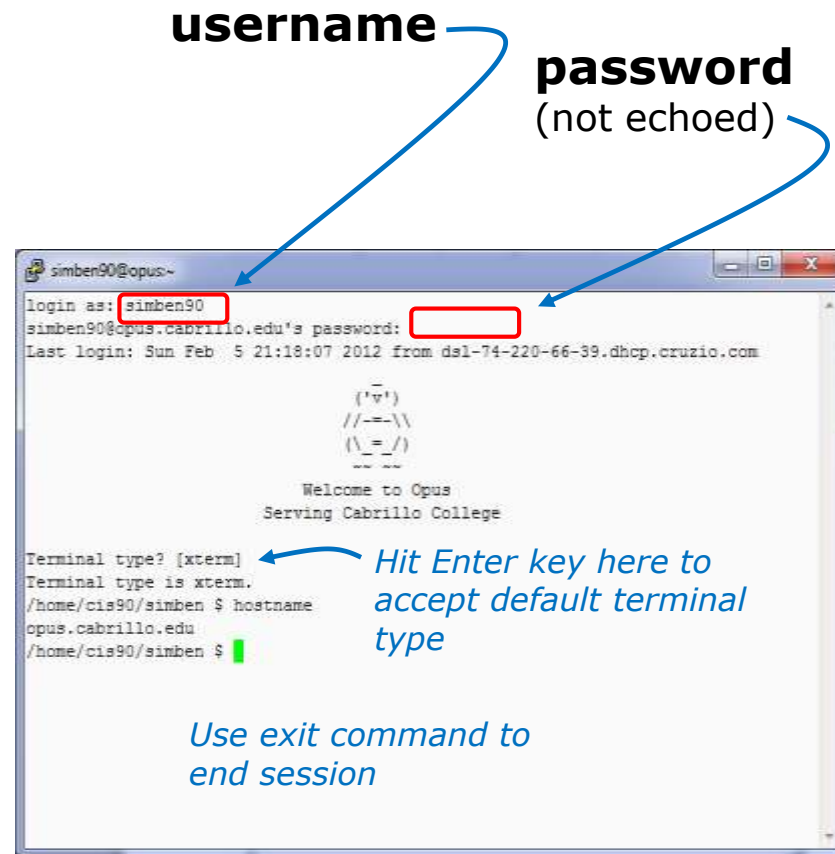
      (  V  )
    //---\\
   (  =  )
    ---

Welcome to Opus
Serving Cabrillo College

Terminal type? [xterm]
Terminal type is xterm.
/home/cis98/simben $
    
```

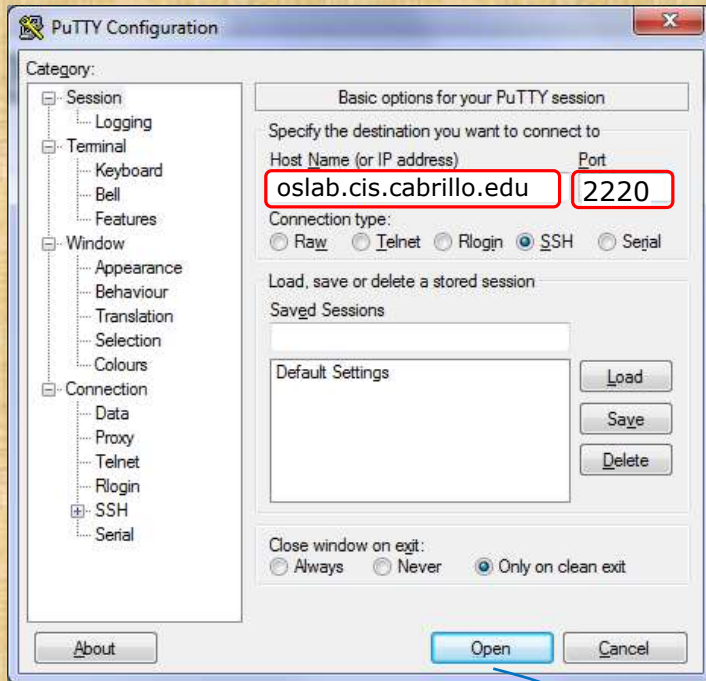
*Enter yes if you get
this authenticity
warning*

SSH login to a UNIX/Linux Server



Note: If you specified the username in Putty or on the ssh command you will not be prompted for the username again.

1) On Windows run Putty:

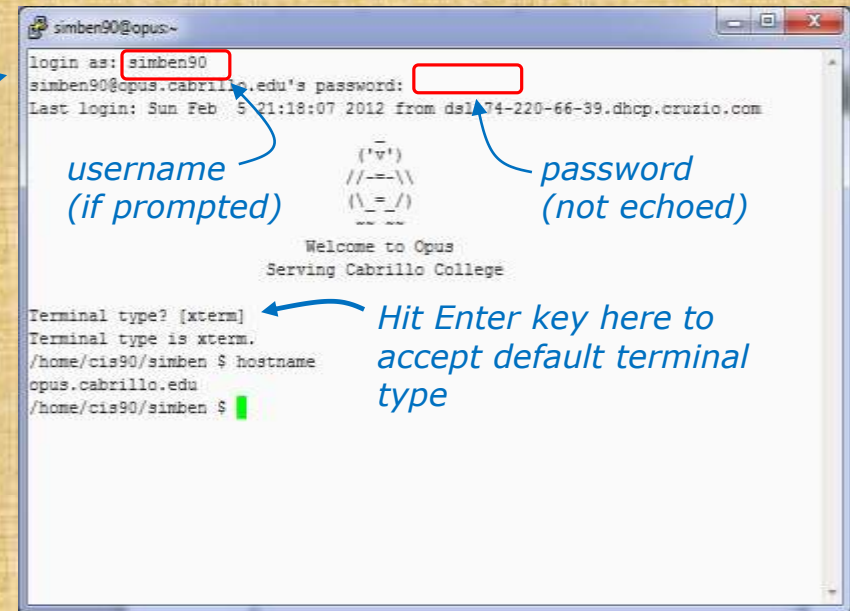


*Respond "yes" to
authenticity warning if
it appears*

Class Activity

Log into Opus using SSH
(specify hostname, username, password, and port)

2) Enter your credentials (not Benji's)



*username
(if prompted)*

*password
(not echoed)*

*Hit Enter key here to
accept default terminal
type*

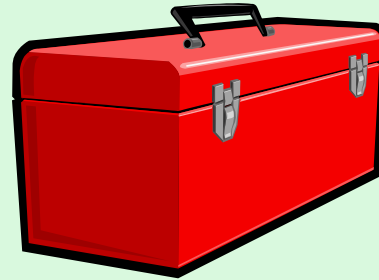
1) On a Mac or Linux terminal type:

ssh -p 2220 username@oslab.cis.cabrillo.edu

Additional Resources

- How to open the terminal window on a mac
https://www.youtube.com/watch?v=zw7Nd67_aFw
- Howto #144: Logging into Opus
<http://simms-teach.com/howtos/144-opus-access.pdf>





First Commands

A wide-angle photograph of a desert landscape. A long, straight asphalt road stretches from the foreground into the distance, leading the eye towards a range of low, arid mountains on the horizon. The sky is a clear, vibrant blue with a few wispy clouds. The ground is dry and sandy, dotted with small, green desert shrubs. The overall scene conveys a sense of vastness and isolation.

First driving lesson



Lesson 1 commands for your toolbox

- | | |
|---------------------------|---|
| cal | - show calendar |
| date | - show current time and date |
| clear | - clear the terminal screen |
| hostname | - show the host name of the computer being accessed |
| ps | - show processes, including the name of the shell being run |
| uname | - show the kernel name |
| cat /etc/issue | - usually shows distro (distribution) name |
| cat /etc/*-release | - usually shows distro (distribution) name |
| who | - shows current login sessions |
| who am i | - identifies which login session you are using |
| tty | - shows your terminal device |
| id | - show user info including username/UID and group/GID |
| history | - show previous commands |
| ssh | - Connect and login to remote system |
| exit | - terminate your shell and log off |

Terminal type

```
login as: simben90  
simben90@oslab.cabrillo.edu's password:  
Last login: Sun Aug 26 08:54:09 41-3-21-105.dsl.fusion.com
```

```
      _  
    ('v')  
  //--=\ \  
  (\_=_/)  
   ~ ~ ~ ~
```

```
Welcome to Opus  
Serving Cabrillo College
```

```
Terminal type? [xterm] ← Hit Enter key here to accept  
Terminal type is xterm. default terminal type  
/home/cis90/simben $
```

The terminal type in this case is "xterm". The terminal type is different than the terminal device (more on this later)

Shell Prompt

login as: **simben90**

simben90@oslab.cabrillo.edu's password:

Last login: Sun Aug 26 08:54:09 41-3-21-105.dsl.fusion.com

```
  _  
 ( 'v' )  
//--=\ \  
( \_=_/ )  
  ~ ~  ~ ~
```

Welcome to Opus
Serving Cabrillo College

Terminal type? [xterm]

Terminal type is xterm.

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

*Hit Enter key here to accept
default terminal type*

*Shell prompt - used by the shell to prompt the
user to enter a command. The shell will display
this prompt every time you hit the Enter key.*

Question: What is your exact prompt string on this system?

Answer: /home/cis90/simben \$

First Commands supplemental

cal command

prompt *command*

```
/home/cis90/simben $ cal  
August 2012  
Su Mo Tu We Th Fr Sa  
      1  2  3  4  
 5  6  7  8  9 10 11  
12 13 14 15 16 17 18  
19 20 21 22 23 24 25  
26 27 28 29 30 31
```

*The **cal** command outputs the calendar for the current month.*

cal command continued

prompt *command* *arguments*

```
/home/cis90/simben $ cal 12 2012
December 2012
Su Mo Tu We Th Fr Sa
      1
 2   3   4   5   6   7   8
 9  10  11  12  13  14  15
16  17  18  19  20  21  22
23  24  25  26  27  28  29
30  31
```

*Adding the month and year arguments to the **cal** command lets you specify a specific month and year*

Question: What day of the week (e.g Su Mo, Tu ...) was December 25, 2012?

Answer: Tu

date command

prompt
/home/cis90/simben \$ *command* **date**
Tue Aug 26 08:11:31 PDT 2014

*The **date** command outputs the current date and time.*

Day-of-the-week Month Day-of-the-month Hours:Minutes:Seconds Time-Zone Year

Question: What time is it on this system? (use HH:MM format and don't dawdle!)

Answer: 08:11

Command Line Interface (CLI) terminology

*This portion is the shell **prompt***

```
/home/cis90/simben $ cal 12 2012
```

```
December 2012
Su Mo Tu We Th Fr Sa
                1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
```

*This is the **command**
which includes two
arguments 12 and 2012*

```
/home/cis90/simben $ cal 12 2012
```

```
December 2012
Su Mo Tu We Th Fr Sa
                1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
```

*These are **arguments** for
the command to process*

*This is the **output** of
the command*

```
/home/cis90/simben $ cal 12 2012
```

```
December 2012
Su Mo Tu We Th Fr Sa
                1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30 31
```

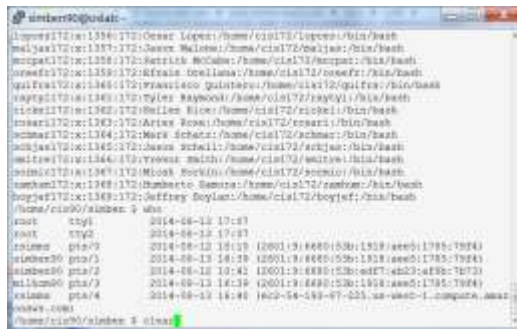
clear command

prompt *command*

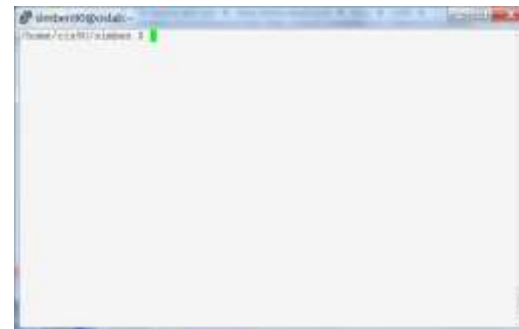
/home/cis90/simben \$ **clear**

The clear command will clear the screen.

(On scrollable terminals you are still able to scroll back to see previous commands entered)



before



after

Question: **What happens when you use the clear command?**

Answer: **The terminal window is cleared (scrolled up and out of sight)**

hostname command

prompt *command*

```
/home/cis90/simben $ hostname  
oslab.cishawks.net
```

*The **hostname** command outputs the hostname of the system you are interacting with.*

Question: What is the hostname of this system?

Answer: oslab.cishawks.net

ps command

The **ps** command outputs the processes (programs loaded into memory and running) belonging to your username.

prompt *command*

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

PID	TTY	TIME	CMD
21629	pts/0	00:00:00	bash
21674	pts/0	00:00:00	ps

name of the shell being run

name of the ps command running that produces this output

There are a number of different shells such as **bash** (Bourne Again shell), **sh** (original Bourne shell), **ksh** (Korn shell), **dash** (Debian Almquist shell), **tcsh** (TENEX C Shell) and **csh** (C shell).

Question: What is the name of the shell running on this system?

Answer: bash

uname command

```
/home/cis90/simben $ uname  
Linux
```

*The **uname** command outputs the name of the kernel being used.*

Question: What is the name of the kernel running on this system?
Answer: Linux

cat command (to show the name of the distribution)

```
/home/cis90/simben $ cat /etc/issue
CentOS release 6.2 (Final)
Kernel \r on \l
```

Name of distro

Version of distro

*These two **cat** commands will usually (but not always) output something that contains the name of the distribution being used.*

```
/home/cis90/simben $ cat /etc/*-release
CentOS release 6.2 (Final)
CentOS release 6.2 (Final)
CentOS release 6.2 (Final)
```

Question: Which distro has been installed on this system?
(single word answer only please)

Answer: CentOS

cat command (to show the name of the distribution)

```
simben90@doc:~$ cat /etc/issue
Ubuntu 13.04 \n \l
```

Name of distro

Version of distro

*These two **cat** commands will usually (but not always) output something that contains the name of the distribution being used.*

```
simben90@doc:~$ cat /etc/*-release
DISTRIB_ID=Ubuntu
DISTRIB_RELEASE=13.04
DISTRIB_CODENAME=raring
DISTRIB_DESCRIPTION="Ubuntu 13.04"
NAME="Ubuntu"
VERSION="13.04, Raring Ringtail"
ID=ubuntu
ID_LIKE=debian
PRETTY_NAME="Ubuntu 13.04"
VERSION_ID="13.04"
HOME_URL="http://www.ubuntu.com/"
SUPPORT_URL="http://help.ubuntu.com/"
BUG_REPORT_URL="http://bugs.launchpad.net/ubuntu/"
```

**Question: Which distro has been installed on this system?
(single word answer only please)**

Answer: Ubuntu

who command

/home/cis90/simben \$ **who**

root	tty1	2014-08-13 17:07	
root	tty2	2014-08-13 17:07	
rsimms	pts/0	2014-08-12 18:10	(2601:9:6680:53b:1918:aee5:1785:79f4)
simben90	pts/1	2014-08-13 16:39	(2601:9:6680:53b:1918:aee5:1785:79f4)
simben90	pts/2	2014-08-12 10:41	(2601:9:6680:53b:edf7:ab23:af8b:7b73)
milhom90	pts/3	2014-08-13 16:39	(2601:9:6680:53b:1918:aee5:1785:79f4)
rsimms	pts/4	2014-08-13 16:40	(ec2-54-193-87-225.us-west-1.compute.amazonaws.com)

username

*terminal
device
used for
login
session*

*date and time
of login*

*where user logged in from (remote hostname
or IP address) . If empty the user logged on
locally rather than over the network.*

Show information about current login sessions

who command

```

/home/cis90/simben $ who
local { root      tty1      2014-08-13 17:07
      { root      tty2      2014-08-13 17:07
remote { rsimms     pts/0      2014-08-12 18:10 (2601:9:6680:53b:1918:aee5:1785:79f4)
      { simben90  pts/1      2014-08-13 16:39 (2601:9:6680:53b:1918:aee5:1785:79f4)
      { simben90  pts/2      2014-08-12 10:41 (2601:9:6680:53b:edf7:ab23:af8b:7b73)
      { milhom90  pts/3      2014-08-13 16:39 (2601:9:6680:53b:1918:aee5:1785:79f4)
      { rsimms     pts/4      2014-08-13 16:40 (ec2-54-193-87-225.us-west-1.compute.amazonaws.com)

```

Users in the same room as the system can login locally. Everyone else must login remotely over the network. The IP address or hostname in the last column indicates a remote login session.

who command

```
/home/cis90/simben $ who
root      tty1      2014-08-13 17:07
root      tty2      2014-08-13 17:07
rsimms    pts/0      2014-08-12 18:10 (2601:9:6680:53b:1918:aee5:1785:79f4)
simben90  pts/1      2014-08-13 16:39 (2601:9:6680:53b:1918:aee5:1785:79f4)
simben90  pts/2      2014-08-12 10:41 (2601:9:6680:53b:edf7:ab23:af8b:7b73)
milhom90  pts/3      2014-08-13 16:39 (2601:9:6680:53b:1918:aee5:1785:79f4)
rsimms    pts/4      2014-08-13 16:40 (ec2-54-193-87-225.us-west-1.compute.amazonaws.com)
```

Question: How many login sessions (including yours) are there on this system?

Answer: 7

Question: Regarding the users logged in REMOTELY (over the network rather than local). Who has been logged in the longest?

Answer: simben90

Question: Where did that REMOTE user (the one logged in longest) login from?

Answer: 2601:9:6680:53b:edf7:ab23:af8b:7b73 (this is an IPv6 address)

who am i command

*The **who am i** command lists just the session you are using*

```
/home/cis90/simben $ who am i
simben90 pts/1      2014-08-13 16:39  (2601:9:6680:53b:1918:aee5:1785:79f4)
```

<i>username</i>	<i>terminal device used for login session</i>	<i>date and time of login</i>	<i>where user logged in from (remote hostname or IP address) . If empty the user logged on locally rather than over the network.</i>
-----------------	---	-----------------------------------	--

This is a good way to distinguish which session you are currently interacting with when you have logged in more than once on the same system.

tty command

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

*The **tty** command shows the terminal device being used for the login session.*

Every login session uses a unique terminal device.

The terminal device is different than the terminal type you accepted during login.

Question: **Which terminal device are you using to connect to this system?**
Answer: **/dev/pts/0**

tty command

```
/home/cis90/simben $ who am i
simben90 pts/1          2014-08-13 16:39 (2601:9:6680:53b:1918:aee5:1785:79f4)
/home/cis90/simben $
/home/cis90/simben $
/home/cis90/simben $ tty
/dev/pts/1
```

*The terminal device is abbreviated in **who** output. The **tty** command on the other hand shows the entire terminal device.*

Question: Run the who am i and tty commands.

What portion of the output from these commands is identical?

Answer: pts/1

id command

*The **id** command outputs information about the user*

```
/home/cis90/simben $ id  
uid=1201(simben90) gid=190(cis90) groups=190(cis90),100(users)  
context=unconfined_u:unconfined_r:unconfined_t:s0-s0:c0.c1023
```

Question: What is your uid (user ID) number on oslab?

Answer: 1201

Question: What is your username on oslab?

Answer: simben90

Question: What is your gid (group ID) number on oslab?

Answer: 190

history command

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

<snipped>

```
54 cal
55 cal 12 2012
56 date
57 clear
58 hostname
59 ps
60 uname
61 cat /etc/issue
62 cat /etc/*-release
63 who
64 who am i
65 tty
66 id
67 id milhome90
68 id milhom90
69 id rsimms
70 history
```

*The **history** command shows all previously entered commands.*

The list can span multiple login sessions.

Question: What happens when you use the history command?
Answer: Shows previously entered commands

ssh command

(to securely log into a remote UNIX/Linux system)

Basic command syntax:

Optional. Specifies the port on the remote system. The default is port 22.

If a username is specified the "@" is used to separate the username from the hostname.

ssh -p nnnn username@hostname

Optional. Specifies the account username on the remote system. The default is the username on the local system.

Required. This can be the hostname or IP address of the remote system. If a hostname is used for a server on the Internet it must be the entire fully qualified domain name (FQDN).

Example **ssh** command Logging into a Pxx-Arwen system from Opus

username → *short hostname*

```
/home/cis90/simben $ ssh cis90@arya-03
```

The authenticity of host 'arya-03 (172.20.90.3)' can't be established.
RSA key fingerprint is 8b:a0:ef:d2:52:e4:f3:a3:c2:41:b5:93:89:c3:1d:58.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'arya-03,172.20.90.3' (RSA) to the list of known hosts.

password is typed but not echoed →
cis90@arya-03's password:
Welcome to Linux Mint 15 Olivia (GNU/Linux 3.8.0-26-generic x86_64)

Welcome to Linux Mint
* Documentation: <http://www.linuxmint.com>
Last login: Mon Jan 27 17:13:33 2014 from opus.cis.cabrillo.edu
cis90@arya-03:~ > **exit**
logout
Connection to arya-03 closed.
/home/cis90/simben \$

Note how the prompt changes (highlighted above) when on a different system

Example **ssh** command Logging into son-of-opus from Opus

non-standard ssh port → *username* → *FQDN hostname*

```
/home/cis90/simben $ ssh -p 2220 simben90@son-of-opus.simms-teach.com
simben90@son-of-opus.simms-teach.com's password: ← password is typed
Last login: Mon Jan 27 18:14:32 2014 from oslab.cis.cabrillo.edu

      _
     ('v')
    //---\\
   ( \  _  / )
    ~ ~  ~ ~

Welcome to Son of Opus
Serving Cabrillo College
```

```
[simben90@son-of-opus ~]$ exit
logout
Connection to son-of-opus.simms-teach.com closed.
/home/cis90/simben $
```

Note how the prompt changes (highlighted above) when on different systems

exit command

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

*The **exit** command logs out and ends the session.*

Housekeeping



Add Codes

- Available after class
- You can stop by before you leave or email me
- Please use them online ASAP!

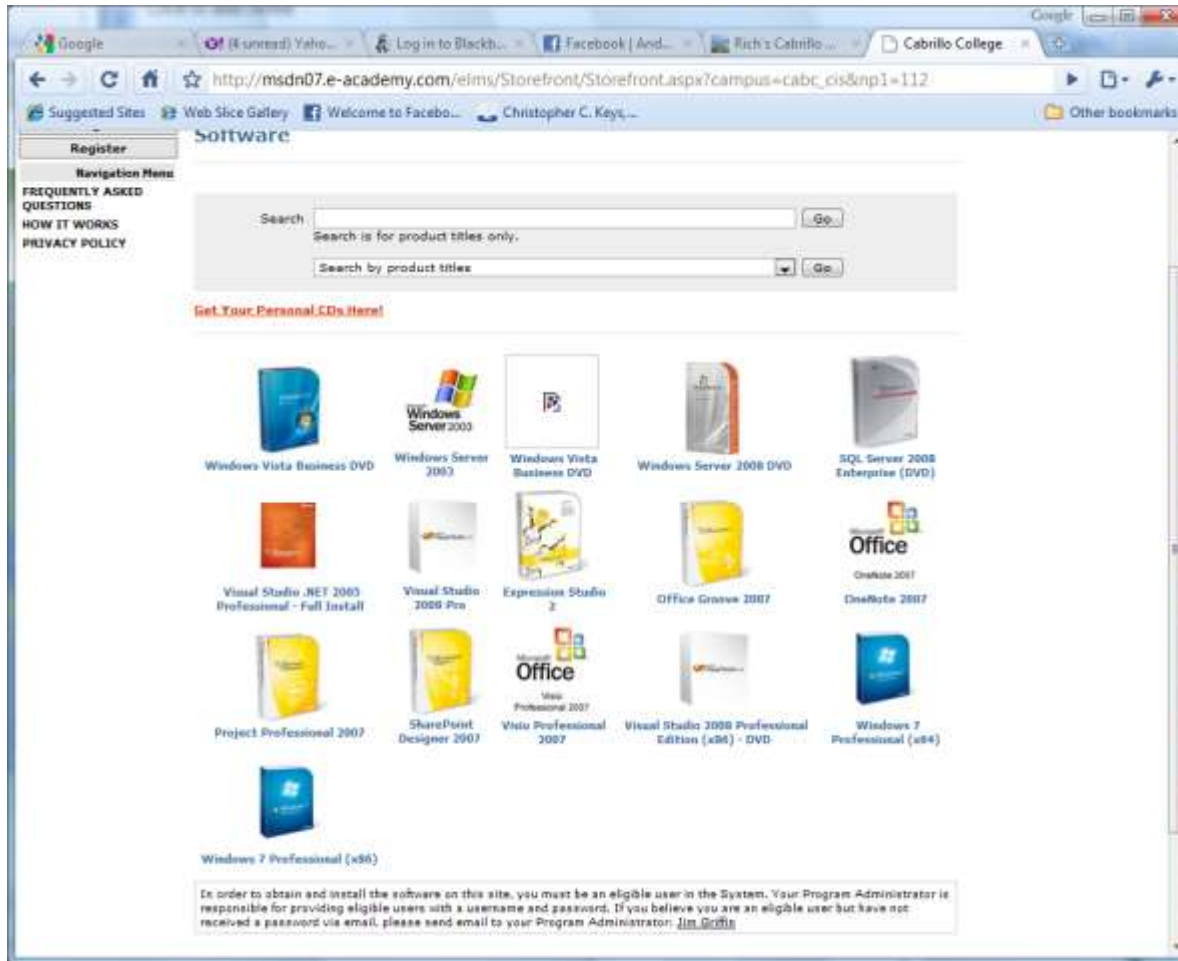
Cabrillo Networking Program Mailing list

Subscribe by sending an email (no subject or body) to:
networkers-subscribe@cabrillo.edu

- Program information
- Certification information
- Career and job information
- Short-term classes, events, lectures, tours, etc.
- Surveys
- Networking info and links



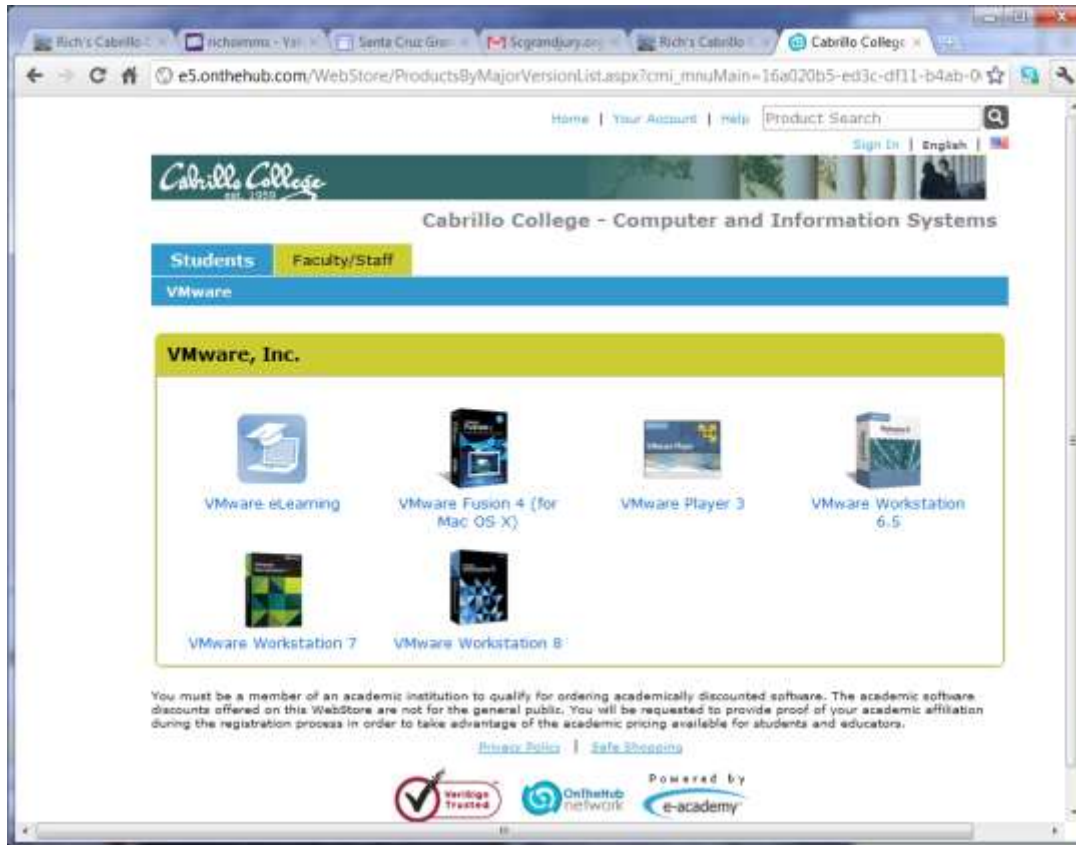
MSDN Academic Alliance



- Microsoft software for students registered in a CIS or CS class at Cabrillo
- Available after registration is final (two weeks after first class)

To get to this page, go to **<http://simms-teach.com/resources>** and click on the appropriate link in the Tools and Software section

VMware e-academy



- VMware software for students registered in a CIS or CS class at Cabrillo
- Available after registration is final (two weeks after first class)

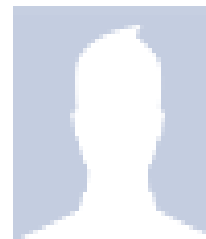
To get to this page, go to **<http://simms-teach.com/resources>** and click on the appropriate link in the Tools and Software section

Help Available in the CIS Lab

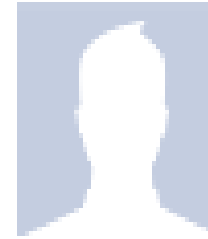
Instructors, lab assistants and equipment are available for CIS students to work on assignments.



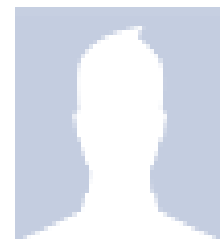
CIS 90 Student Lab Assistants:



Andrew



TBD



TBD

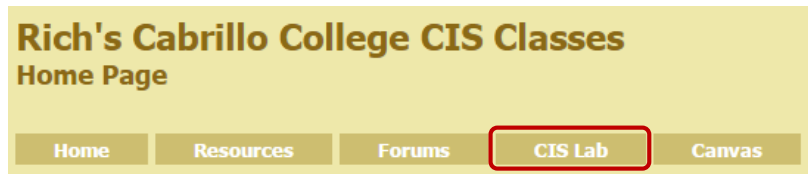
Linux Instructors



Rich Simms



Mike Matera



Check the lab schedule here

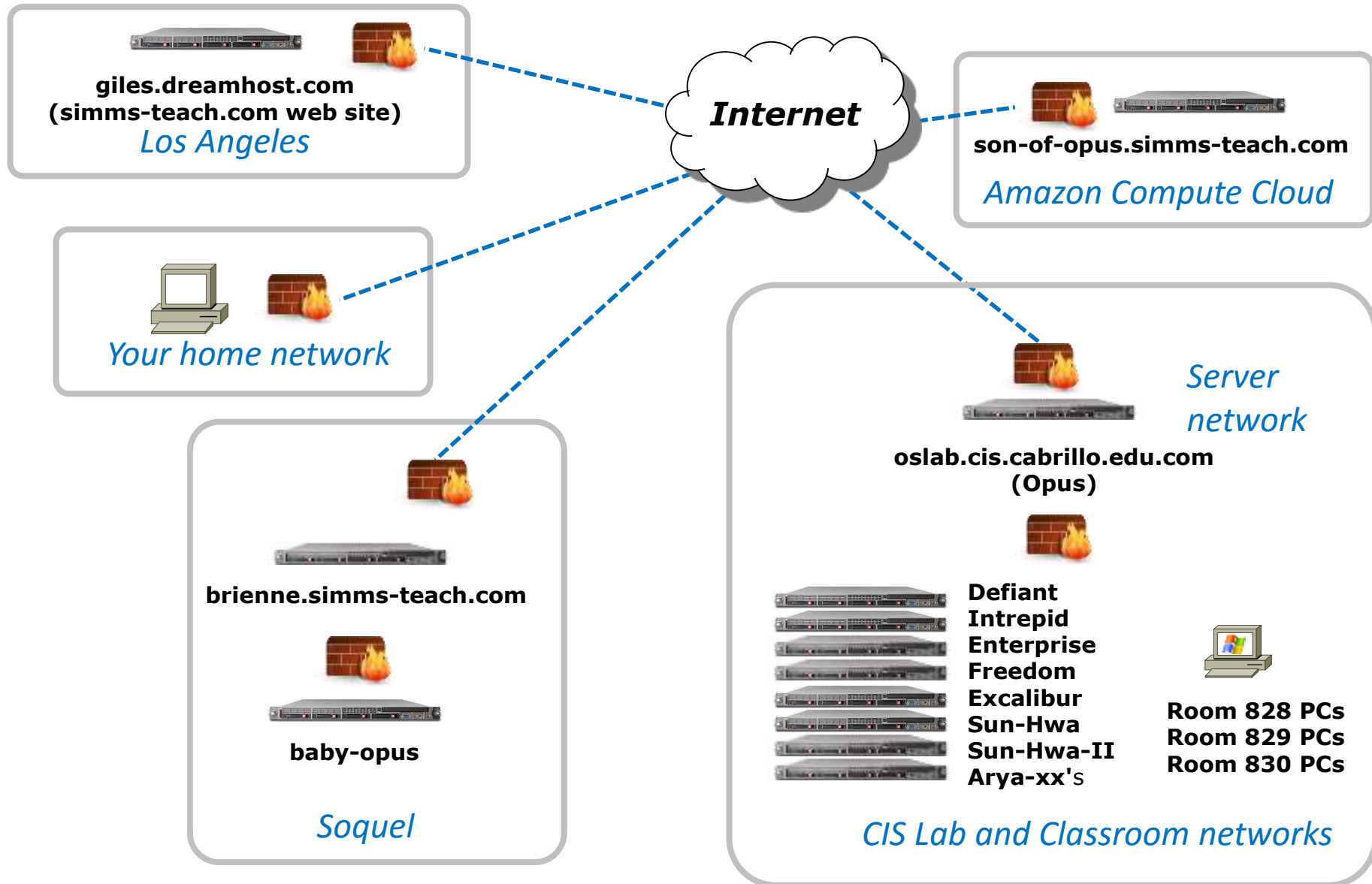
Study Groups

- Two heads are better than one!
- Great way to work lab assignments and prepare for tests.
- Excellent way to learn.
- Less time being in the "I'm stuck" zone.
- A great way to develop teamwork skills.
- Improves scheduling and organization skills.
- Let me know on the student survey if you are interested and would like my help finding study partners.

Additional Resources

- My office hours for additional hands-on help, feedback and development planning.
- Cabrillo CS/CIS LinkedIn group for students and alumni
<http://www.linkedin.com/groups/Computer-Science-Computer-Information-Systems-6689142>
- Society of Women Engineers (SWE) Facebook page
<https://www.facebook.com/SWEorg>
- Syssters Listserv
<http://anitaborg.org/get-involved/syssters/>

CIS 90 systems Roadmap



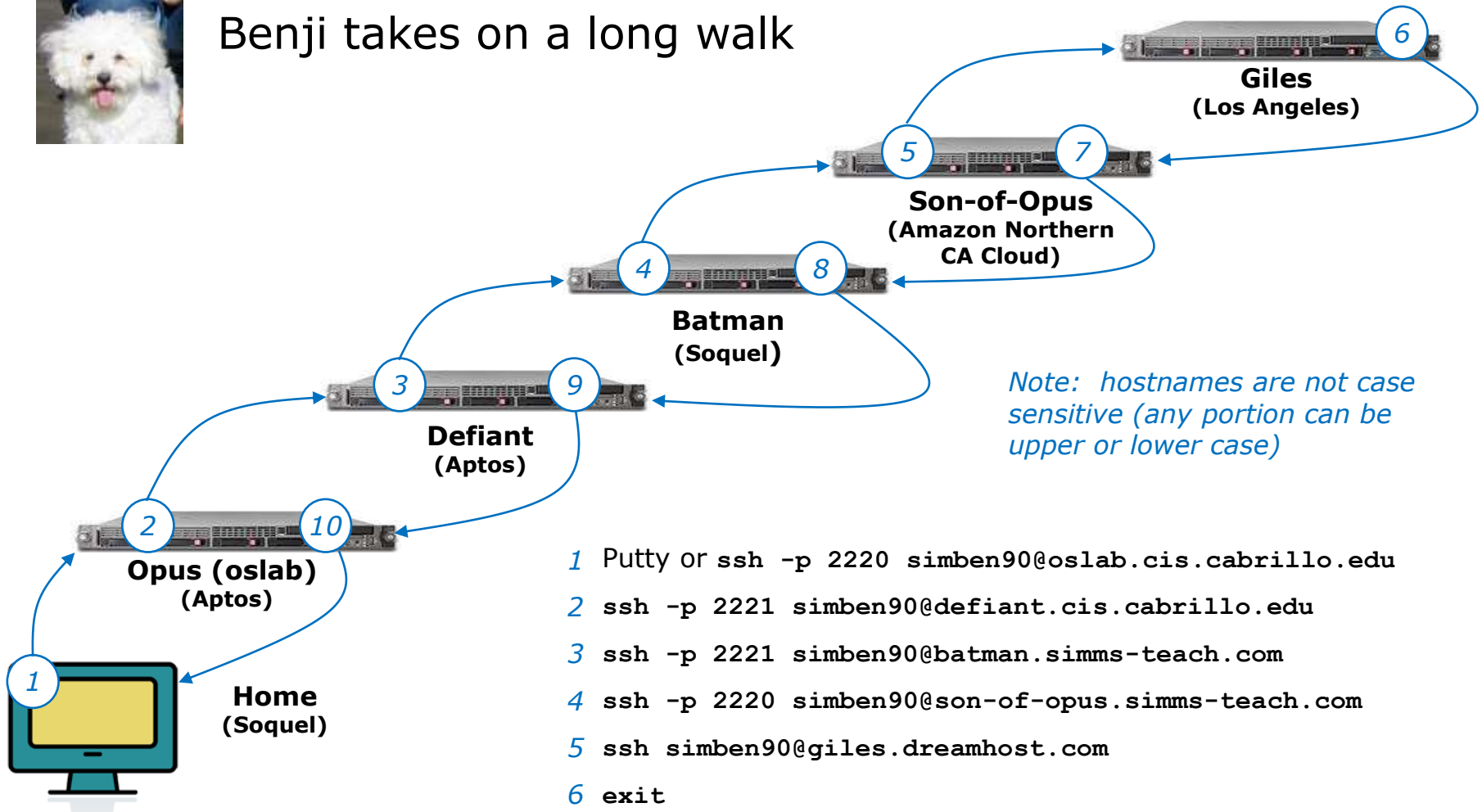
A photograph of a busy New York City street, likely Times Square, with tall buildings, traffic lights, and a green street sign for W 53 St. The text "Navigating the Internet using SSH" is overlaid in large white letters.

Navigating the Internet using SSH

Second driving lesson



Benji takes on a long walk



```

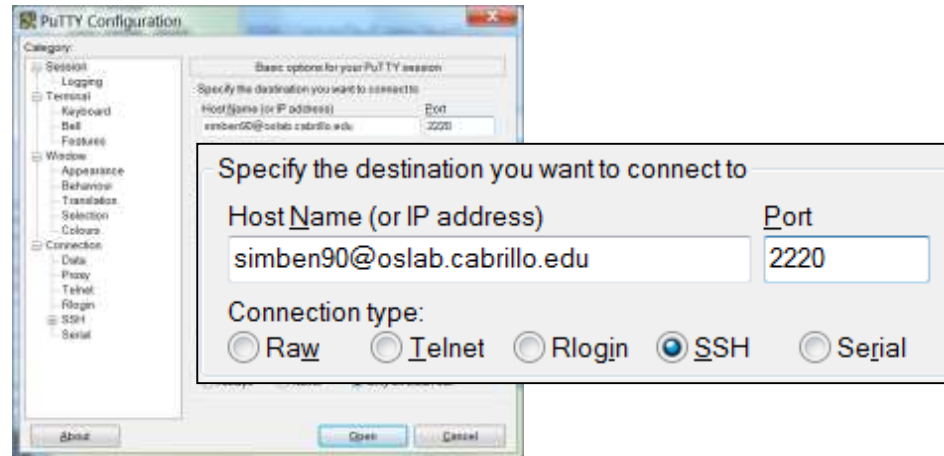
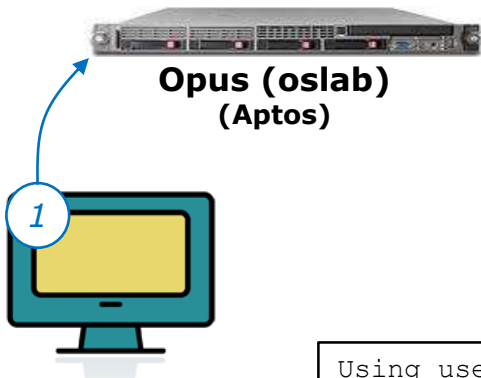
1 Putty or ssh -p 2220 simben90@oslab.cis.cabrillo.edu
2 ssh -p 2221 simben90@defiant.cis.cabrillo.edu
3 ssh -p 2221 simben90@batman.simms-teach.com
4 ssh -p 2220 simben90@son-of-opus.simms-teach.com
5 ssh simben90@giles.dreamhost.com
6 exit
7 exit
8 exit
9 exit
10 exit
    
```

Navigating the Internet using SSH

supplemental



Benji takes on a long walk



```
Using username "simben90".
simben90@oslab.cabrillo.edu's password:
Last login: Mon Aug 18 09:09:14 2014 from 2601:9:6680:53b:93f:8df2:6592:a958
```

```
( 'v' )
\ / - - \ /
( \ _ _ / )
~ ~ ~ ~
```

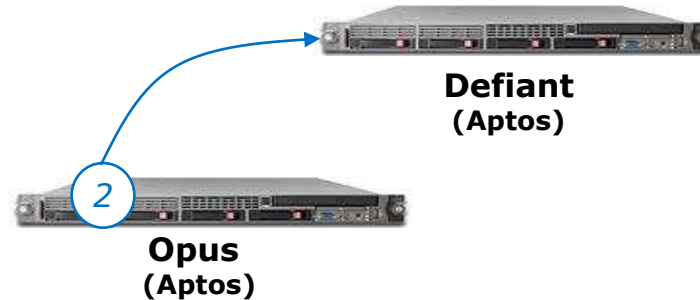
Welcome to Opus
Serving Cabrillo College

```
Terminal type? [xterm]
Terminal type is xterm.
/home/cis90/simben $ hostname
oslab.cis.cabrillo.edu
/home/cis90/simben $
```

*Note: usernames and
passwords are case sensitive*

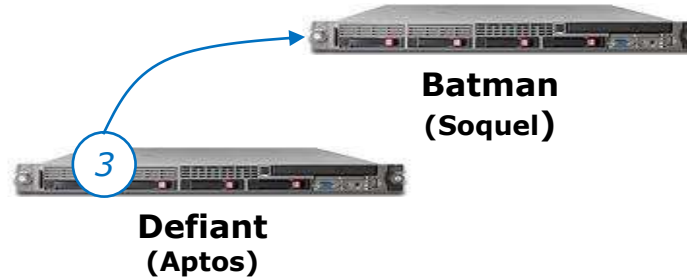


Benji takes on a long walk

[illegible]



Benji takes on a long walk



```
[defiant] $ ssh -p 2221 simben90@batman.simms-teach.com
The authenticity of host '[batman.simms-teach.com]:2221 ([2601:9:6680:53b:20c:29ff:fe0d:9285]:2221)'
can't be established.
RSA key fingerprint is b4:20:f4:dc:d1:ab:5b:8a:bb:44:61:bf:1c:c8:97:6e.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[batman.simms-teach.com]:2221,[2601:9:6680:53b:20c:29ff:fe0d:9285]:2221'
(RSA) to the list of known hosts.
simben90@batman.simms-teach.com's password:
```

```

      _==/          i      i          \==_
    /xx/          | \__ / |          \xx\
  /xxxx\        |xxxxx|        /xxxx\
 |xxxxxx\_      _xxxxxxx_      _/xxxxxx|
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
|XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
|XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|
xxxxxx/^^^"\XXXXXXXXXXXXXXXXXXXX/^^^"\xxxxxx
|xxx|      \xxx/^^\xxxx/^^\xxx/      |xxx|
  \xx\      \x/      \xxx/      \x/      /xx/
    "\      "      \x/      "      /"

```

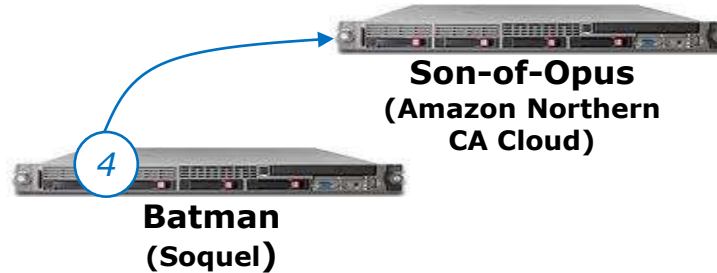
Welcome to Batman

Serving Cabrillo College and Ceiba College Prep

```
[simben90@batman ~]$ hostname
batman.simms-teach.com
[simben90@batman ~]$
```



Benji takes on a long walk



```
[simben90@batman ~]$ ssh -p 2220 simben90@son-of-opus.simms-teach.com
The authenticity of host '[son-of-opus.simms-teach.com]:2220 ([54.193.87.225]:2220)' can't
be established.
RSA key fingerprint is 05:02:f7:48:00:e6:af:a9:dd:47:33:c3:82:80:29:4d.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '[son-of-opus.simms-teach.com]:2220,[54.193.87.225]:2220' (RSA)
to the list of known hosts.
simben90@son-of-opus.simms-teach.com's password:
Permission denied, please try again.
simben90@son-of-opus.simms-teach.com's password:
Last login: Mon Aug 18 12:55:04 2014 from 207.62.187.227
```

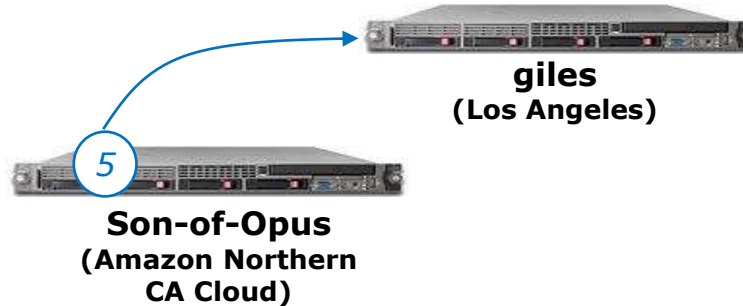
```
  _
 ('v')
//---\
(\_=_/)
~~ ~~
```

Welcome to Son-of-Opus
Serving Cabrillo College

```
[simben90@son-of-opus ~]$
```



Benji takes on a long walk



```
[simben90@son-of-opus ~]$ ssh simben90@giles.dreamhost.com
The authenticity of host 'giles.dreamhost.com (208.113.153.233)' can't be established.
RSA key fingerprint is d8:3c:65:de:d3:43:ef:aa:76:13:d9:16:85:b9:36:9a.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'giles.dreamhost.com,208.113.153.233' (RSA) to the list of known
hosts.
simben90@giles.dreamhost.com's password:
```

```

  _ _
 / _ \ _ _ | / _ \ _ _ |
 | ( _ | | | _ _ \ _ _ \
 \ _ / | | | \ _ | | | /
 | _ /

```

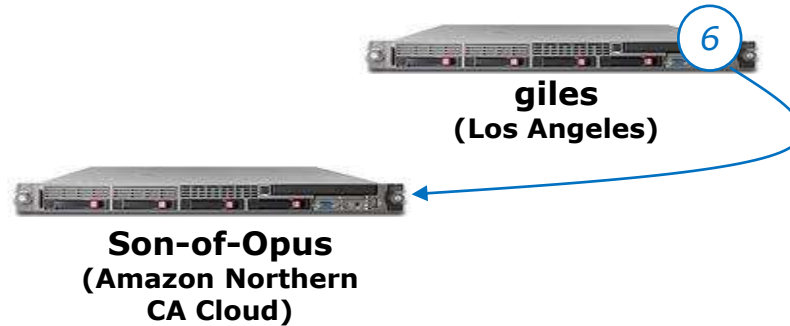
Welcome to giles.dreamhost.com

Any malicious and/or unauthorized activity is strictly forbidden.
All activity may be logged by DreamHost Web Hosting.

```
[giles]$ hostname
giles
```



Benji takes on a long walk



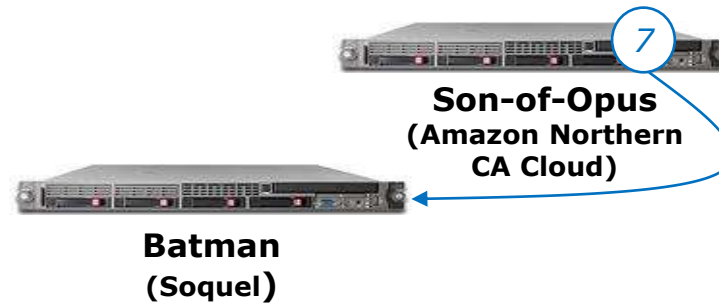
```
[giles]$ exit
logout
Connection to giles.dreamhost.com closed.
[simben90@son-of-opus ~]$ hostname
son-of-opus.simms-teach.com
[simben90@son-of-opus ~]$
```



When you **exit** a server it's like you pop it off the top of a stack and return to the previous server underneath



Benji takes on a long walk



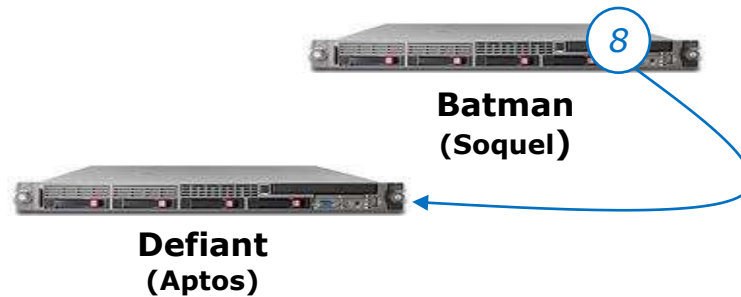
```
[simben90@son-of-opus ~]$ exit
logout
Connection to son-of-opus.simms-teach.com closed.
[simben90@batman ~]$ hostname
batman.simms-teach.com
[simben90@batman ~]$
```



When you **exit** a server it's like you pop it off the top of a stack and return to the previous server underneath



Benji takes on a long walk



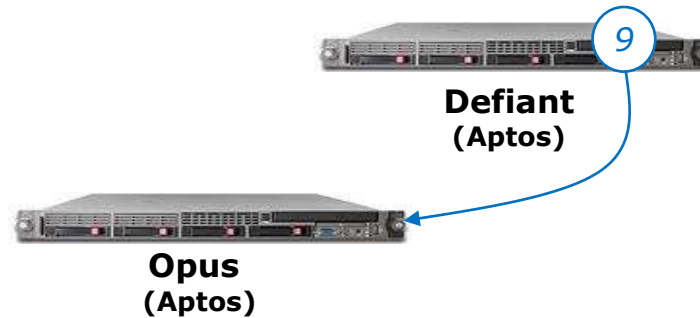
```
[simben90@batman ~]$ exit
logout
Connection to batman.simms-teach.com closed.
[defiant] $ hostname
defiant.cis.cabrillo.edu
[defiant] $
```



When you **exit** a server it's like you pop it off the top of a stack and return to the previous server underneath



Benji takes on a long walk



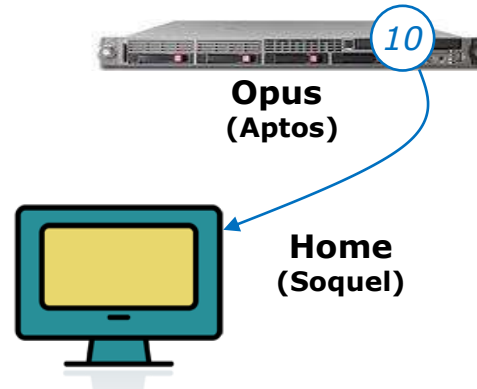
```
[defiant] $ exit
Connection to defiant.cis.cabrillo.edu closed.
/home/cis90/simben $ hostname
oslab.cis.cabrillo.edu
/home/cis90/simben $
```



When you **exit** a server it's like you pop it off the top of a stack and return to the previous server underneath



Benji takes on a long walk



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

And the Putty terminal program closes



*When you **exit** a server it's like you pop it off the top of a stack and return to the previous server underneath*

Assignment



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

Lesson	Date	Topics	Chapter	Due*
1	1/27	Class and Linux Overview • Learn first UNIX/Linux commands Materials - Presentation slides (download) - Login Credentials Sheet (download) Supplemental - Howto #144: Logging into Opus (download) Assignment Student Survey Lab 1 CCC Confer Enter virtual classroom Class archives	1.1-1.15 (Gillay) 2,4,5, p113-115, p164-172 (Hahn)	
2	2/3	Quiz 1 Commands - Understand how the UNIX login operation works - Meet John the Ripper and learn how vulnerable a poor password is - Understand basic command syntax and operation - Understand program files and what happens when they are run - Understand how the shell works and environment variables - Understand how to get online documentation Materials - Presentation slides (download) - Howto #106: Configuring Putty (download) Assignment Lab 2 CCC Confer Enter virtual classroom Class archives	2.3-2.7 2.11 3.7-3.20 4.19-4.22 9.1-9.2 (Gillay)	Lab 1 Student Survey

Assigned on 1/27

Survey

Lab 1
Scavenger
Hunt



Both due by 11:59PM on Wednesday 2/3

Lab 1 - Scavenger Hunt

Starting on Opus you will log into several systems using ssh. On each system you will collect an item after answering correctly a series of questions.

*Start and
end here*



**oslab.cis.cabrillo.edu
(Opus)**

Get a movie



Enterprise

Get a book



Freedom

Get a fruit



Intrepid

Get a star



Defiant

Get a musical instrument



Lexington

Get a dog



Excalibur

Lab 1 - Tips

Tip - as a shortcut, use **sc** instead of typing the full **scavenge** each time.

```
simben90@excalibur:~  
/home/cis90/simben $ sc  
#####  
# S C A V E N G E R   H U N T   #  
#####  
  
Welcome Benji,  
  
You are on a scavenger hunt to find six items. To get  
each item you must login to a different Linux system and  
answer some questions. Each time you answer a question  
you must use that answer as an argument to the scavenge  
command. Once you have answered each question correctly you  
will be given the item for that system.  
  
Instructions will follow on how to reach the next system  
where you will have more questions and another item.  
  
The scavenger hunt begins here on Opus (AKA oslab)!  
Are you ready to start? (y or n) [y]: y  
  
INSTRUCTIONS FOR THE NEXT SYSTEM:  
With the ssh command login to the next Linux system using:  
  Username: simben90  
  Password: <the one assigned to you by the instructor>  
  Hostname: excalibur.cis.cabrillo.edu  
  Port: 2226  
You will be scavenging for dogs there.  
  
Have fun scavenging!  
  
/home/cis90/simben $ ssh -p 2226 simben90@excalibur.cis.cabrillo.edu  
The authenticity of host '[excalibur.cis.cabrillo.edu]:2226 ([172.20.90.56]):2226  
)' can't be established.  
RSA key fingerprint is f7:38:2a:90:00:7a:08:46:e8:ba:b7:93:ac:f8:35:b1.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added '[excalibur.cis.cabrillo.edu]:2226, [172.20.90.56]:222  
6' (RSA) to the list of known hosts.  
simben90@excalibur.cis.cabrillo.edu's password:  
Last login: Mon Jan 26 15:30:55 2015 from opus.cis.cabrillo.edu  
  
[simben90@excalibur ~]$ sc
```

Lab 1 - Tips

```
simben90@excalibur:~
#####
#  SCAVENGER HUNT  #
#####

STAT
- Y
- Y
- Y

Nice work ... your answer to Q17 was: C O R R E C T !!

You are off to a good start Benji!

Since you correctly answered all questions for the excalibur
system here is your dog:

Redbone Coonhound

(Please record the system name and dog in your notes because
you will need them when submitting this lab!)

You are not done yet. Please continue on to the next system.

INSTRUCTIONS FOR THE NEXT SYSTEM:
With the ssh command login to the next Linux system using:
Username: simben90
Password: <the one assigned to you by the instructor>
Hostname: freedom.cis.cabrillo.edu
Port: 2225
You will be scavenging for books there.

Have fun scavenging!

[simben90@excalibur ~]$
```

To copy text in Putty just select it (left mouse button and drag)

copy

```
simben90@oslab:~
/home/cis90/simben $ submit
Which lab are you submitting? (1,2,3, ...) 1
Please stretch this window so it is a lot TALLER
Press Enter to continue

=====
Lab 1 Scavenger Hunt
Update the table below with your collected items then submit
=====

SYSTEM      ITEM      COLLECTED
defiant     star      <no entry>
lexington   instrument <no entry>
enterprise   movie     <no entry>
intrepid    fruit     <no entry>
freedom     book      <no entry>
excalibur   dog       Redbone Coonhound

BONUS QUESTION ANSWERS
Q1) <no entry>
Q2) <no entry>
Q3) <no entry>

SELECTION MENU
1) Set star
2) Set instrument
3) Set movie
4) Set fruit
5) Set book
6) Set dog
7) Answer bonus questions
8) Submit your work for grading
9) Quit without submitting
Enter selection (1-9): 6
Please enter your dog on excalibur: Redbone Coonhound
```

To paste in Putty just use a right mouse click

paste

Tip - use two login sessions. Use one to collect scavenger hunt items and the other to record your work using the **submit** script. Submit as many times as you wish. Only the last submittal will be graded.

Lab Assignments

Pearls of Wisdom:

- Don't wait till the last minute to start.
- 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. Refer back to lesson slides to understand the commands you are using.
- Use Google when trouble-shooting
- 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.
- Plan for things to go wrong and give yourself time to ask questions and get answers.
- **Late work is not accepted** so submit what you have for partial credit.



A scenic photograph of a sunset over a beach. The sky is filled with vibrant colors of orange, pink, and purple, with wispy clouds catching the low light. The sun is partially obscured by a dark, silhouetted cliff on the right side of the frame. The beach in the foreground is dark, with some wet sand reflecting the colors of the sky. The overall mood is peaceful and serene.

Wrap up

New shell commands:

cal	- show calendar
cat /etc/issue	- usually shows distro (distribution) name
cat /etc/*-release	- usually shows distro (distribution) name
clear	- clear the terminal screen
date	- show current time and date
exit	- terminate your shell and log off
history	- show previous commands
hostname	- show the name of the computer being accessed
id	- show user and group id information
ps	- show processes (loaded programs) being run
ssh	- secure login to a remote system
uname	- show kernel name
tty	- show terminal device
who	- show everyone logged in
who am i	- identifies which login session you are using

New Files and Directories:

VMware:

Next Class

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

**Lab 1
& Survey**

Quiz questions for next class:

- What part of UNIX/Linux is both a user interface and a programming language?
- What is the lowest level, inner-most component of a UNIX/Linux Operating System called?
- What command shows the other users logged in to the computer?



Backup

UNIX/Linux Commands on various systems

Apple iPad



```

ipash v.2.5.1 - Copyright 2013, Martino Orlandi (www.treehousetec.com)
Type 'help' for a list of available commands

August 25, 2014 at 5:25 PM logged on Mary's iPad

ipash:/# date
Monday, August 25, 2014 at 5:25:49 PM Pacific Daylight Time
ipash:/# hostname
Mary's iPad
ipash:/# uname
Darwin
ipash:/# ps
PID  PROCESS NAME      USER      PRIORITY
18   timed              mobile    17
21   mediaremotd        mobile    17
23   fairplayd.A1       mobile    17
25   iaptransportd       mobile    24
28   softwareupdated     mobile    17
29   backboardd          mobile    24
33   SpringBoard         mobile    17
34   routined            mobile    17
35   softwarebehavior    mobile    17
37   aggregated          mobile    17
42   aossnotifd          mobile    17
45   mediaserverd        mobile    24
54   identityservices    mobile    17
56   imagent             mobile    17
59   BTServer            mobile    24
60   installd            mobile    17
70   lsd                 mobile    17
72   xpcd                mobile    17
73   MobileGestaltHel    mobile    17
74   BlueTool            mobile    24
80   IMDPersistenceAg    mobile    17
83   apsd                mobile    24
85   accountsd           mobile    17
92   dataaccessd         mobile    24
94   itunescloudd        mobile    17
95   itunesstored        mobile    17
96   storebookkeeperd    mobile    17
97   gamed               mobile    24
99   medialibraryd       mobile    17
100  DuetLST             mobile    17
101  tccd                mobile    17
104  kbd                 mobile    17
105  MobileMail          mobile    24
106  softwareupdate      mobile    17
107  assetd              mobile    17
108  librariand          mobile    17
111  calaccessd          mobile    17
115  Skype              mobile    17
118  MobileSlideShow     mobile    24
124  geod                mobile    24
125  MobileCal           mobile    17
127  absd                mobile    17
128  ipash               mobile    17
ipash:/#

```

Asus Router



```
172.30.1.1 - PuTTY
admin@RT-AC66U: /tmp/home/root# uname
Linux
admin@RT-AC66U: /tmp/home/root# date
Mon Aug 25 18:13:02 DST 2014
admin@RT-AC66U: /tmp/home/root# ps
  PID  USER      VSS  STAT  COMMAND
    1  admin      0  S     /sbin/init
    2  admin      0  SWc   [kthreadd]
    3  admin      0  SWM   [ksoftirqd/0]
    4  admin      0  SWc   [events/0]
    5  admin      0  SWc   [khelper]
   18  admin      0  SWc   [kblockd/0]
   49  admin      0  SW    [pdflush]
   50  admin      0  SW    [pdflush]
   51  admin      0  SWc   [kswapd0]
   52  admin      0  SWc   [aio/0]
   96  admin      0  SWc   [mtdblockd]
  125  admin      0  SWc   [krmcd]
  129  admin     608  S     hotplug2 --persistent --no-coldplug
  162  admin    2344  S     console
  166  admin    1552  S     /bin/sh
  168  admin    1540  S     syslogd -n 0 -s -o /tmp/syslog.log -s 256 -l 6
  170  admin    1540  S     /sbin/klogd
  172  admin      0  SWc   [khubd]
  248  admin    2352  S     usbld
  320  admin    2352  S     /sbin/wanduck
  327  admin    1544  R     telnetd
  330  admin    1056  S     /bin/eapd
  335  admin    1492  S     nas
  336  admin    1860  S     /bin/wpa_monitor
  337  admin    2352  S     wpaside
  340  nobody    1100  S     dnsmasq --log-async
  341  admin    4356  S     httpd
  343  admin    1552  S     crond
  344  admin    1028  S     /usr/sbin/infoavr br0
  347  admin    3700  S     watchdog
  348  admin    2352  S     ots
  351  admin    1240  S     rstats
  365  admin    1072  S     1ld2d hr0
  375  admin    1376  S     /usr/sbin/acsd
  386  admin    2052  S     u2ec
  388  admin    1128  S     lpd
  391  admin    2052  S     u2ec
  395  admin    2052  S     u2ec
  412  admin    1016  S     rdnssd -u admin -i eth0
  413  admin    1084  S     rdnssd -u admin -i eth0
  461  admin    2352  S     ntp
  468  admin     748  S     dhcp6c -T LL eth0
  472  admin     744  S     dhcp6s -c /etc/dhcp6s.conf br0
  474  admin     768  S     radvd -u admin
  476  admin     768  S     radvd -u admin
  477  admin    1556  S     udhcpc -i eth0 -p /var/run/udhcpc0.pid -s /tmp/udhcp
  485  admin     760  S     miniupnpd -f /etc/upnp/config
  486  admin    2352  S     disk_monitor
  884  admin    1308  S     networkmap
 2734  admin    1692  S     -sh
 2794  admin    1544  R     ps
admin@RT-AC66U: /tmp/home/root#
```

Samsung Galaxy smartphone



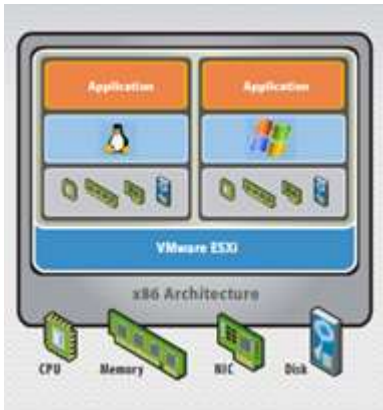
```

172.30.1.1 - PuTTY
u0_a61@d2vmu:/ $ clear
u0_a61@d2vmu:/ $ date
Wed Aug 27 17:52:55 PDT 2014
u0_a61@d2vmu:/ $ echo $SHELL
/system/bin/sh
u0_a61@d2vmu:/ $ id
uid=10061(u0_a61) gid=10061(u0_a61) groups=1015(sdcard_rw),1028(sdcard_r),3003(inet),50061(all_a61) context=u:
r:untrusted_app:s0
u0_a61@d2vmu:/ $ cat /proc/version
Linux version 3.4.0-1368792 (dpi@SWDD5612) (gcc version 4.7 (GCC) ) #1 SMP PREEMPT Wed Apr 30 20:46:12 KST 201
4
u0_a61@d2vmu:/ $ ps

```

USER	PID	PPID	VSZ	RSS	WCHAN	PC	NAME
root	1	0	1372	888	ffffffff	00000000	S /init
root	2	0	0	0	ffffffff	00000000	S kthreadd
root	3	2	0	0	ffffffff	00000000	S ksoftirqd/0
root	6	2	0	0	ffffffff	00000000	S migration/0
root	7	2	0	0	ffffffff	00000000	S watchdog/0
root	12	2	0	0	ffffffff	00000000	S khelper
root	13	2	0	0	ffffffff	00000000	S suspend_sys_syn
root	14	2	0	0	ffffffff	00000000	S suspend
root	17	2	0	0	ffffffff	00000000	S irq/203-msmdata
root	18	2	0	0	ffffffff	00000000	S sync_supers
root	19	2	0	0	ffffffff	00000000	S bdi-default
root	20	2	0	0	ffffffff	00000000	S kblockd
root	21	2	0	0	ffffffff	00000000	S khubd
root	22	2	0	0	ffffffff	00000000	S l2cap
root	23	2	0	0	ffffffff	00000000	S a2mp
root	24	2	0	0	ffffffff	00000000	S cfg80211
root	25	2	0	0	ffffffff	00000000	S rpciod
root	26	2	0	0	ffffffff	00000000	S modem_notifier
root	27	2	0	0	ffffffff	00000000	S smd_channel_clo
root	28	2	0	0	ffffffff	00000000	S smsm_cb_wq
root	30	2	0	0	ffffffff	00000000	S qmi
root	31	2	0	0	ffffffff	00000000	S rmtx
root	32	2	0	0	ffffffff	00000000	S msm_ipc_router
root	33	2	0	0	ffffffff	00000000	S apr_driver
root	34	2	0	0	ffffffff	00000000	S khungtaskd
root	35	2	0	0	ffffffff	00000000	S kswapd0
root	36	2	0	0	ffffffff	00000000	S fanotify_mark
root	37	2	0	0	ffffffff	00000000	S ecryptfs-kthrea
root	38	2	0	0	ffffffff	00000000	S nfsiod
root	39	2	0	0	ffffffff	00000000	S cifsiod
root	40	2	0	0	ffffffff	00000000	S crypto
root	58	2	0	0	ffffffff	00000000	S mdp_dma_wq

VMware ESXi server



```
simben90@excalibur:~
~ # clear
~ # date
Thu Aug 28 00:59:38 UTC 2014
~ # hostname
vmserver3.cis.cabrillo.edu
~ # who:
root          char/pty/t0      00:00   Aug 28 00:57:54   excalibur.cis.cabrillo.edu
~ # uname
VMkernel
~ # ps | head
WID  CID  World Name          Command
32769      idle1
32770      idle2
32771      idle3
32772      idle4
32773      idle5
32774      idle6
32775      idle7
32776      idle8
~ # ps | grep sh
32786      tlbflushcount
32787      tlbflushcountryFlush
32788      vaSpaceTLBFlush
32873      pshare-est
32901      OCFlush
32903      BCFlush-0
33273 33273 sh                /bin/sh
33315 33315 sh                /bin/sh
33479 33479 sh                /bin/sh
33743 33743 sh                /bin/sh
33780 33780 sh                /bin/sh
33818 33818 sh                /bin/sh
33871 33871 sh                /bin/sh
33911 33911 sh                /bin/sh
33947 33947 sh                /bin/sh
33990 33990 sh                /bin/sh
34064 34064 sh                /bin/sh
34115 34115 sh                /bin/sh
34217 34217 sh                /bin/sh
34260 34260 sh                /bin/sh
34297 34297 sh                /bin/sh
34333 34333 sh                /bin/sh
34539 34539 sh                /bin/sh
34613 34613 sh                /bin/sh
34706 34706 sh                /bin/sh
35049 35049 sh                /bin/sh
4197333 4197333 sshd             sshd
4197376 4197376 sh                -sh
~ #
```

HP-UX



```
cupsim98.cup.hp.com - PuTTY
restrictions as set forth in sub-paragraph (c)(1)(ii) of the Rights in
Technical Data and Computer Software clause in DFARS 252.227-7013.

Hewlett-Packard Company
3000 Hanover Street
Palo Alto, CA 94304 U.S.A.

Rights for non-DOD U.S. Government Departments and Agencies are as set
forth in FAR 52.227-19(c)(1,2).
You have mail.

Value of TERM has been set to "xterm".
WARNING: YOU ARE SUPERUSER !!

# ls /
.mozilla      .sw          home         sbin
.mozilla-license bin          lib          stand
.profile     core         lost+found   tmp
.rnd         dev          net          usr
.ssh         etc          opt          var

# uname -a
HP-UX cupsim98 B.11.23 U ia64 0564465391 unlimited-user license
#
```

BSD Unix

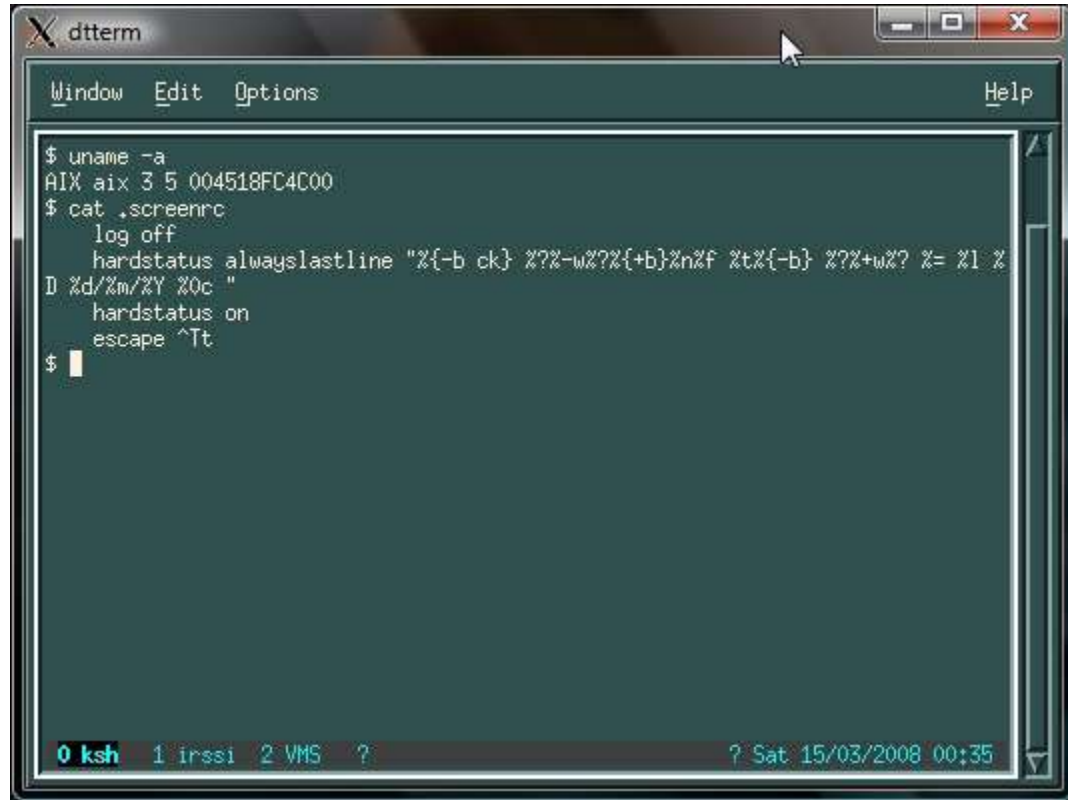


```

root@FreeBSD-unixmen:/root # uname -a
FreeBSD FreeBSD-unixmen 9.1-RELEASE FreeBSD 9.1-RELEASE #0 r243826: Tue Dec  4 0
6:55:39 UTC 2012      root@obrian.cse.buffalo.edu:/usr/obj/usr/src/sys/GENERIC i
386
root@FreeBSD-unixmen:/root # ifconfig
em0: flags=8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST> metric 0 mtu 1500
      options=9b<RXCSUM, TXCSUM, VLAN_MTU, VLAN_HWTAGGING, VLAN_HWCSUM>
      ether 08:00:27:ca:cd:91
      inet 144.44.172.182 netmask 0xfffffe00 broadcast 144.44.173.255
      nd6 options=29<PERFORMNUD,IFDISABLED,AUTO_LINKLOCAL>
      media: Ethernet autoselect (1000baseT <full-duplex>)
      status: active
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> metric 0 mtu 16384
      options=600003<RXCSUM, TXCSUM, RXCSUM_IPV6, TXCSUM_IPV6>
      inet6 ::1 prefixlen 128
      inet6 fe80::1%lo0 prefixlen 64 scopeid 0x3
      inet 127.0.0.1 netmask 0xff000000
      nd6 options=21<PERFORMNUD,AUTO_LINKLOCAL>
root@FreeBSD-unixmen:/root # █

```

IBM AIX



```
$ uname -a
AIX aix 3 5 004518FC4C00
$ cat .screenrc
log off
hardstatus alwayslastline "%{-b ck} %?%-w%?%{+b}%n%f %t%{-b} %?%+w%? %=- %l %
D %d/%m/%Y %0c "
hardstatus on
escape ^Tt
$
```

0 ksh 1 irssi 2 VMS ? ? Sat 15/03/2008 00:35