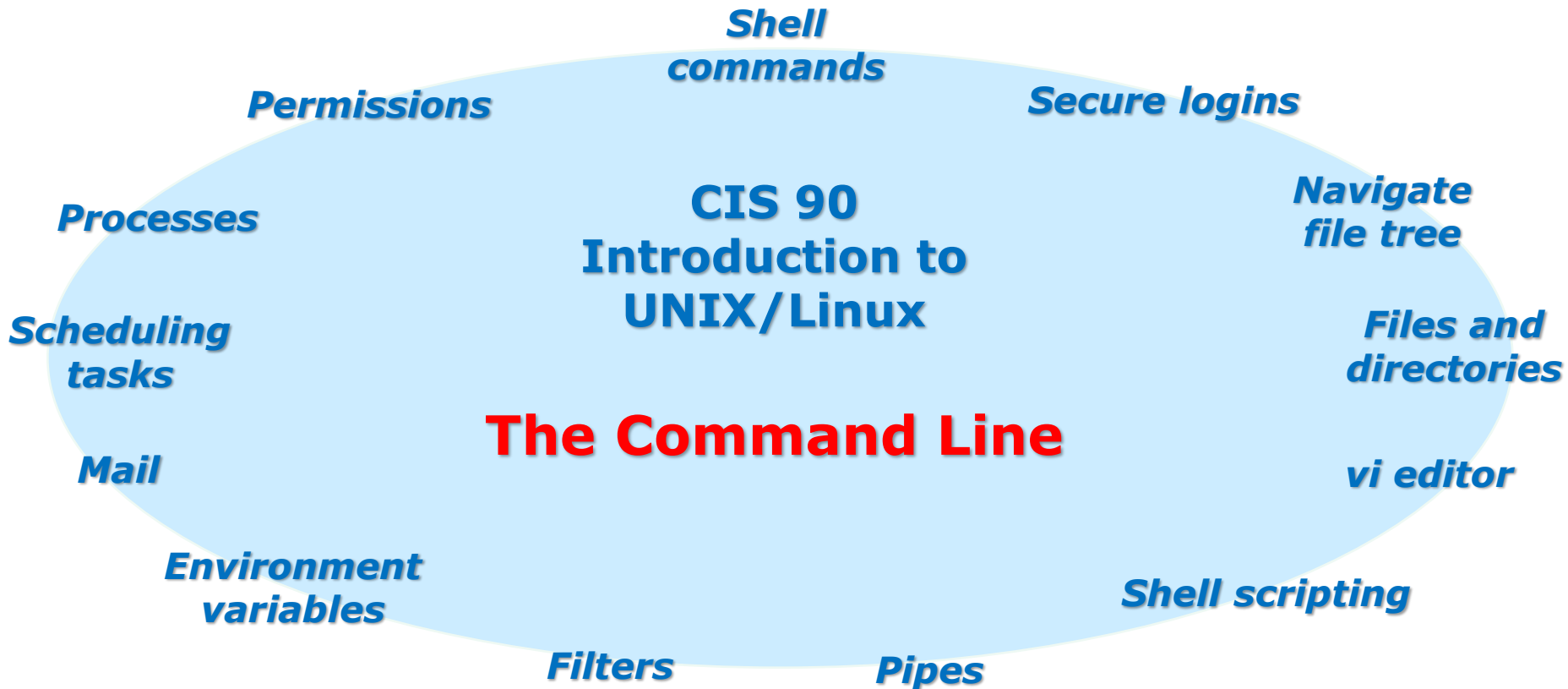




Rich's lesson module checklist

Last updated 2/22/2018

- ☐ Zoom recording named and published for previous lesson
 - ☐ Slides and lab posted
 - ☐ WB converted from PowerPoint
 - ☐ Print out agenda slide and annotate page numbers
 - ☐ 1st minute quiz
 - ☐ Flash cards
 - ☐ Calendar page updated
 - ☐ Lab 3 tested
 - ☐ check3 updated and tested
 - ☐ scripts/schedule-submit-locks
 - ☐ Census done - Microsoft and VMware web store accounts made
 - ☐ cis90-students alias in /etc/aliases + newaliases command
 - ☐ Welcome ready for mailing
 - ☐ Lab 3 Unix events ready for mailing
 - ☐ sun-hwa-iii ice cream and accounts made
 - ☐ rhea setup
 - ☐ irssi and eh-irc tested
 - ☐ 9V backup battery for microphone
 - ☐ Backup slides, CCC info, handouts on flash drive
 - ☐ Key card to open door
- ☐ <https://zoom.us>
 - ☐ Putty + slides + Chrome
 - ☐ Enable/Disable attendee sharing
^ > Advanced Sharing Options > Only Host
 - ☐ Enable/Disable attended annotations
Share > More > Disable Attendee Sharing



Student Learner Outcomes

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

Introductions and Credits



Jim Griffin

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



Rich Simms

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

And thanks to:

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



Student checklist - Before class starts

The screenshot shows the website simms-teach.com/cis90calendar.php. The page title is "Rich's Cabrillo College CIS Classes CIS 90 Calendar". On the left sidebar, the "CIS 90" link is highlighted. The main content area shows the "CIS 90 (Fall 2014) Calendar" with tabs for "Course Details", "Grades", and "Calendar". The "Calendar" tab is selected, showing a table with columns for "Lesson", "Date", "Topics", and "Link". The first row is for Lesson 1 on 9/2, titled "Class and Linux Overview". Below the table, there are links for "Presentation slides (download)", "Supplemental" (including "PowerPoint: Logging into Opus (download)"), "Assignment" (including "Student Survey" and "Lab 1"), "Enter virtual classroom", "Quiz 1", and "Commands".

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



Student checklist - Before class starts

☐ Google

☐ ConferZoom

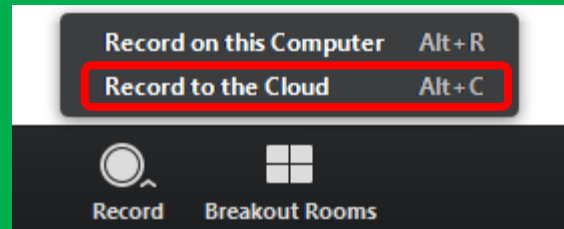
☐ Downloaded PDF of Lesson Slides. I like Foxit Reader so I can take notes using annotations.

The screenshot shows a Zoom meeting interface with several windows open. The main window displays a PDF document titled "Get into the car" with a background image of a white car. Other windows include the Google homepage, the Rich's Cabrillo College CIS 90 website, and a document titled "CIS 90 - Lesson 1" showing a stack of papers and the text "Each student gets their own Arya VM for the term". The Zoom toolbar at the bottom shows options like "Unmute", "Start Video", "Invite", "Participants", "Share Screen", "Chat", "Record", and "Leave Meeting".

☐ CIS 90 website Calendar page

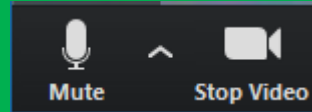
☐ One or more login sessions to Opus-II

Start



Start Recording

Audio Check



Start Recording

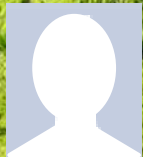
Audio & video Check



Instructor: **Rich Simms**
Dial-in: **408-638-0968 (toll)**
Meeting ID: **426 283 384**



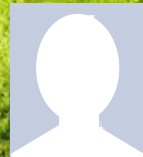
Brandon



Shane



Dan



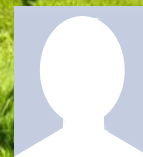
Kage



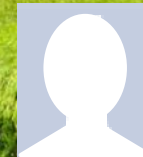
Justin



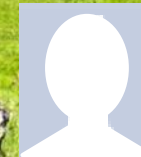
Jo Anne



Darren



Laine



Luis



Christian



Jetta



Cesar



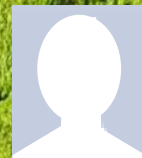
Paul



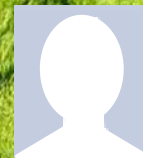
Hilary



Fritz



Jake



Richard



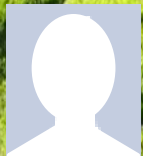
Fergus



Ciarán



Kimi



November



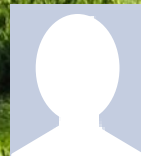
Henry



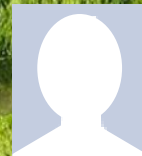
Elena



David



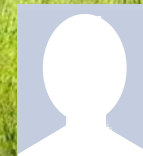
Claudius



Jose



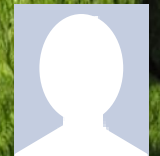
Edgar



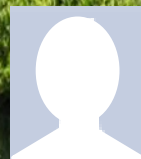
Adam



Nathanael T.



Clara

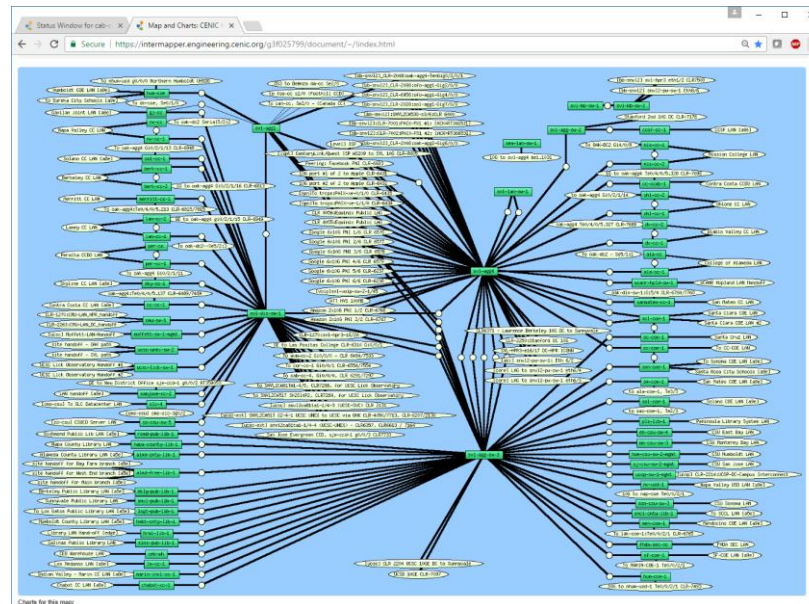


Nate P.



Nathan K.

Network Check



<https://intermapper.engineering.cenic.org/g3f025799/document/~!/index.html>

First Minute Quiz

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

Use CCC Confer White Board

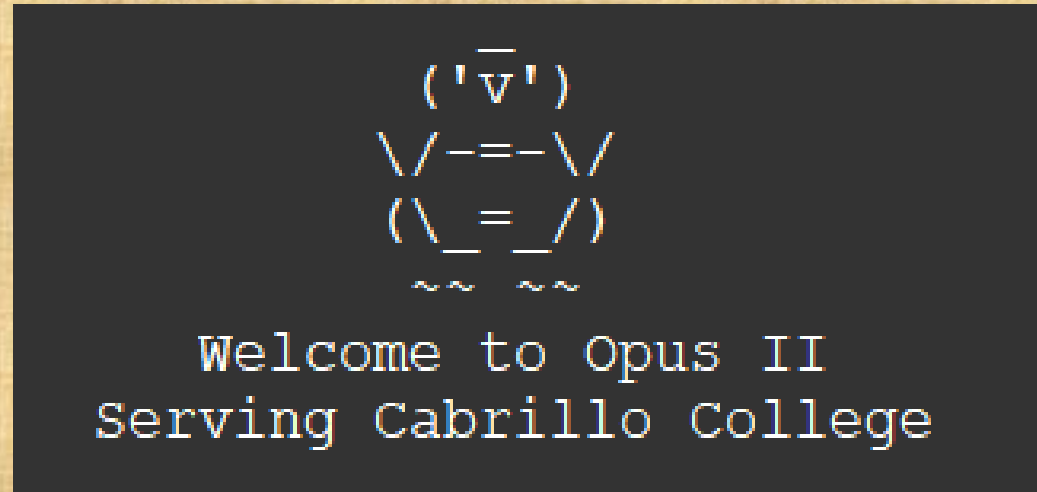
email answers to: risimms@cabrillo.edu

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

Electronic Mail

Objectives	Agenda
<ul style="list-style-type: none">• Learn how to use the UNIX communication tools write and mail.• Overview on end-to-end email.	<ul style="list-style-type: none">• Quiz• Guest speaker, on-the-job training• Questions• Subtle stuff• Mini review• Practice questions• Terminals• Housekeeping• Course expectations check• Write command• IRC• Mail basics (send, read, reply, save)• More on mail (forward, docs, headers, delete, folders)• End-to-end email• Other MUAs, MTAs, DA and AAs• Wrap up

Class Activity



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

Class Activity

3	2/19	<p>Unit 3</p> <p>Electronic Mail</p> <ul style="list-style-type: none">• Guest speaker: Denise Moore on OTC (On-The-Job) training programs• Learn how to use the LMS communication tools: write and /bin/mail• Overview on android and email <p>Materials</p> <ul style="list-style-type: none">• Presentation slides (download) <p>Supplemental</p> <ul style="list-style-type: none">• Howto #319: Accessing vlab (download) <p>Assignment</p> <ul style="list-style-type: none">• Read/skim Lesson 3 slides	Lab 2
---	------	---	-----------------------

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

If you haven't already,
download the lesson slides

Class Activity

	<ul style="list-style-type: none">• Read/submit Lesson 2 status• Student Survey• Lab 1	
	ConferZoom <ul style="list-style-type: none">• Enter virtual classroom• Class archives	
	Unit 1 Command <ul style="list-style-type: none">• Understand how the UNIX login operation	

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

If you haven't already, join
ConferZoom classroom



Denise Moss

Apprenticeships and Internships

Computer Information Systems (CIS)

Gerlinde Brady, Dean of Career Technical Education

Matt Weis, Internship & Work Experience Instructor

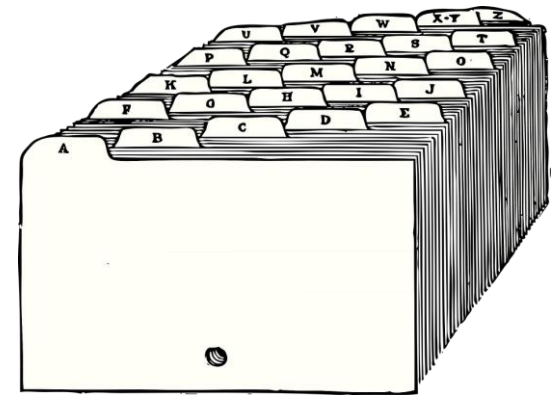
Denise Moss, Apprenticeship Job Developer

On the Job Training (OJT) & Work Experience

Developing employment, internship and On the-Job-Training (OJT) opportunities in IT sector

Examples of OJT opportunities:

- Short-Term Contract
- Part-time/Full Time Employment
- Paid/Unpaid Internships
- Volunteer
- Department of Labor Registered Apprenticeship



Examples of Placement Opportunities

Help Desk Technician / Computer Support Specialist (Windows and Linux)

System Analyst

Web Developer

Software Developer

Cyber Security



Help Desk Technician / Computer Support Specialist

Test and evaluate existing network systems

Perform regular maintenance to ensure networks operate correctly

Troubleshoot LANs, WANs, and Internet systems

Provide help and advice to computer users and organizations



Systems Analyst

Research emerging technologies for potential increases in organizational efficiency and effectiveness

Devise ways to add new functionality to existing computer systems

Oversee installation/configuration of new systems to customize for the organization



Web Developer

Design and create websites

Create and test applications for a website

Write code for websites using HTML, XML, etc

Work with graphics/designers to develop website layout

Integrate graphics, audio, and video into websites



Software Developer

Creative minds behind computer programs

Develop applications for underlying systems that run devices or control networks

Analyze users' needs and design/test/develop software to meet those needs

Ensure programs continue to run normally through software maintenance and testing



Cyber Security

Encrypt data transmissions and establish firewalls

Monitor use of data files and regulate access

Monitor current reports of computer viruses and determine necessary upgrades



Student Preparation and Placement Services

We assist with Preparation and placement:

Technical training - CIS program

Employment Portfolio development

- Resume development
- Interview coaching
- Social Media (LinkedIn)

Pre-screening

Placement



Employers & Workforce Partners

- Cabrillo college IT dept
- Cloud Brigade / Launch Brigade
- Bay Federal
- Second Harvest
- Digital Nest
- Workforce Development Board
- And more



CLOUD
BRIGADE



LAUNCH
BRIGADE



Digital
NEST



SANTA CRUZ COUNTY
WORKFORCE
DEVELOPMENT

What next?

Email Questions:

Matt Weis maweis@cabrillo.edu

Denise Moss denise.moss.ed@gmail.com

Complete [Interest Form](https://goo.gl/forms/0BJfhHDFmZbOhNFh2) (<https://goo.gl/forms/0BJfhHDFmZbOhNFh2>)



Questions

Questions?

Lesson material?

Labs? Tests?

How this course works?

- Graded work in home directories
- Answers in /home/cis90/answers

Who questions much, shall learn much, and retain much.

- Francis Bacon

If you don't ask, you don't get.

- Mahatma Gandhi

Chinese
Proverb

他問一個問題，五分鐘是個傻子，他不問一個問題仍然是一個傻瓜永遠。

He who asks a question is a fool for five minutes; he who does not ask a question remains a fool forever.

Grades posted on website

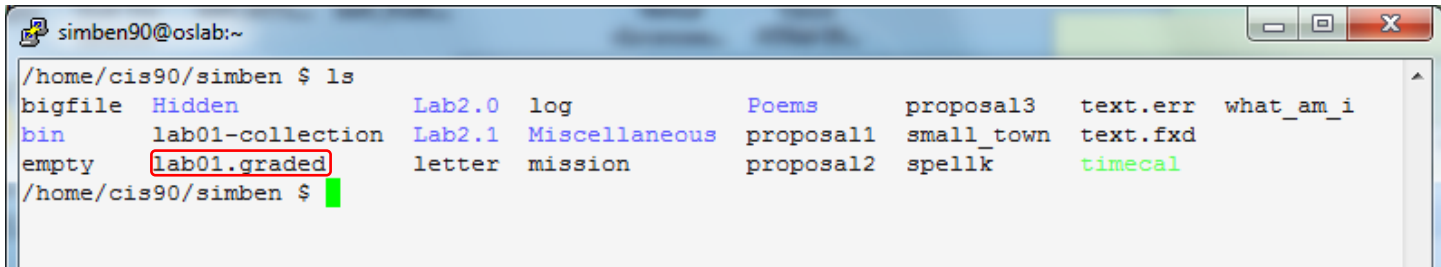
<http://simms-teach.com/cis90grades.php>

Current Progress

Code	Grade	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540	541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580	581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600	601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620	621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640	641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660	661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680	681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700	701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720	721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740	741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760	761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780	781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800	801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820	821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840	841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860	861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880	881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900	901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920	921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940	941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960	961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980	981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128	1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164	1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188	1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200	1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212	1213	1214	1215	1216	1217	12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Graded work is copied to your home directories

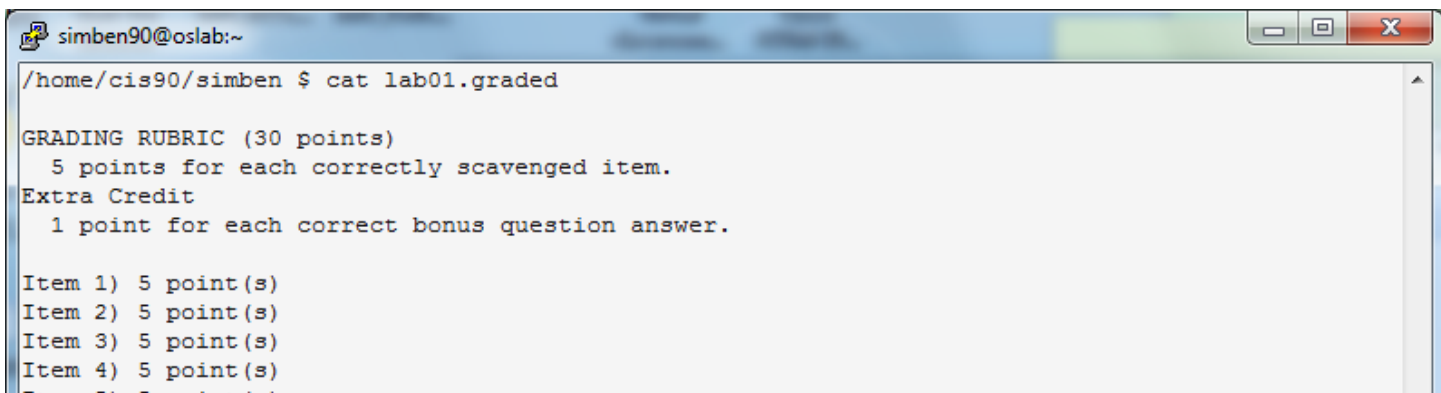
ls



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

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

cat lab01.graded

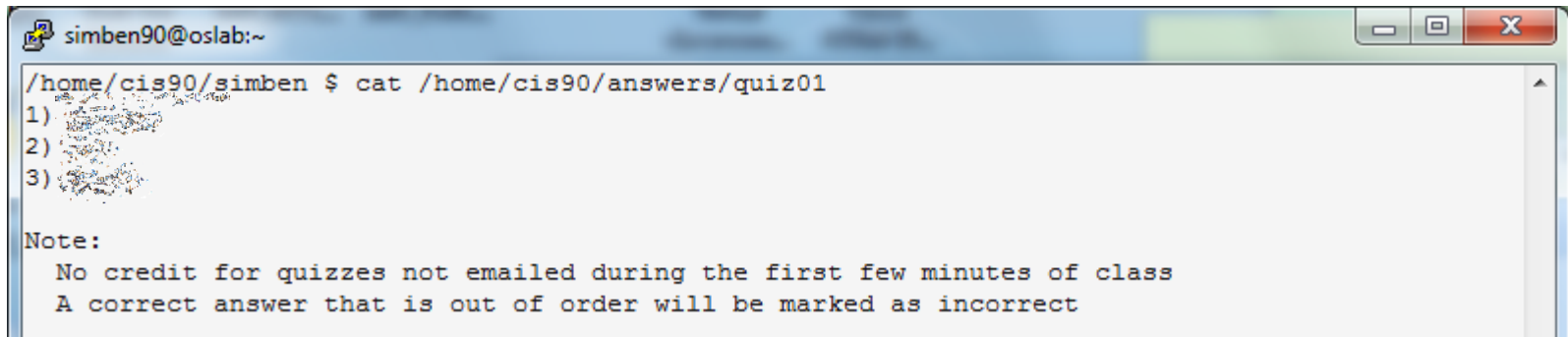


```
simben90@oslab:~  
/home/cis90/simben $ cat lab01.graded  
  
GRADING RUBRIC (30 points)  
  5 points for each correctly scavenged item.  
Extra Credit  
  1 point for each correct bonus question answer.  
  
Item 1) 5 point(s)  
Item 2) 5 point(s)  
Item 3) 5 point(s)  
Item 4) 5 point(s)  
Item 5) 5 point(s)
```

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

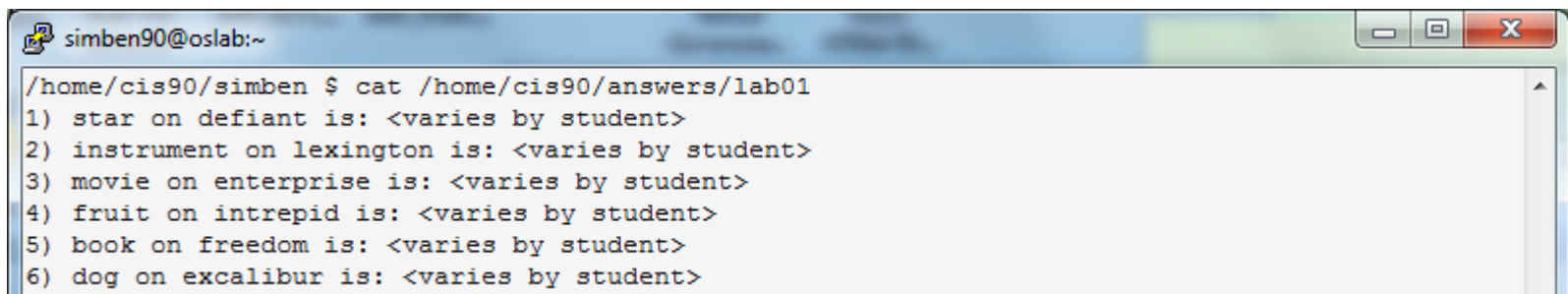
The answers/ directory on Opus-II

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



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

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



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

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

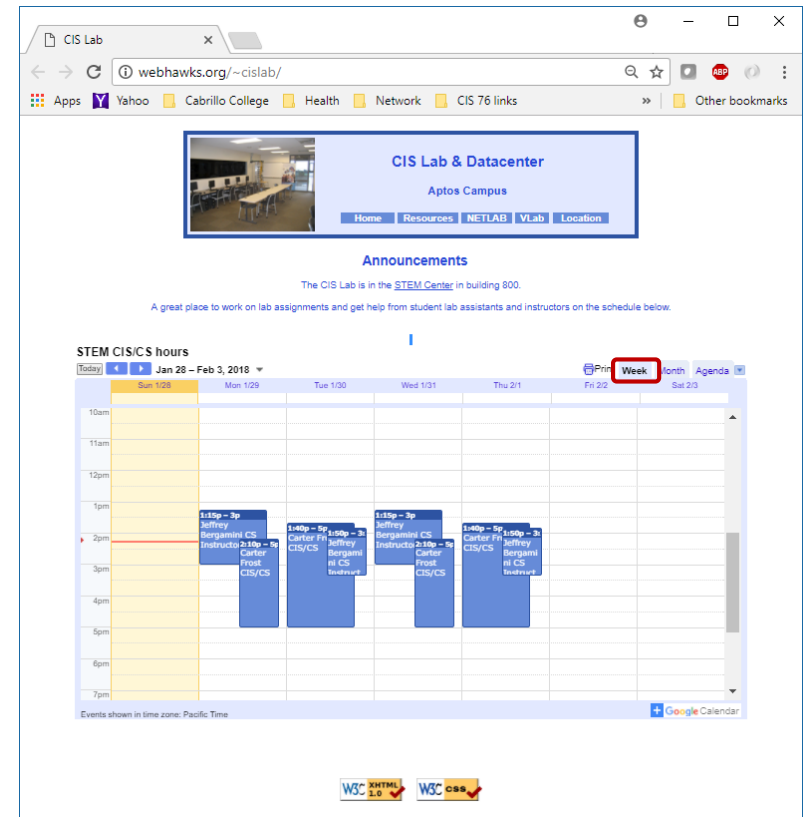
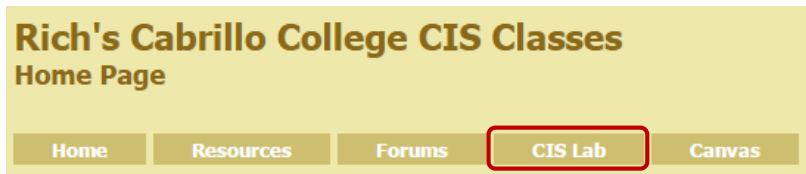
Getting Help When Stuck on a Lab Assignment

- Google the topic/error message.
- Search the Lesson Slides (they are PDFs) for a relevant example on how to do something.
- Post a question on the forum. Explain what you are trying to do and what you have tried so far.
- Talk to a STEM center tutor/assistant.
- Come see me during my office or lab hours. **I will be in the CTC (room 1403) every Wednesday afternoon from 3-5:30.**
- Make use of the Open Questions time at the start of every class.
- Make a cheat sheet of commands and examples so you never again get stuck on the same thing!

Expect to do a LOT of troubleshooting in this course!

Help Available in the CIS Lab

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



To see schedule, click the CIS Lab link on the website and use the "Week" calendar view

CTC - Building 1400 On lower campus



I will be in the CTC (room 1403) every Wednesday
afternoon from 3-5:30



The slippery slope



- 1) If you didn't submit Lab 1 ...
- 2) If you were in class and didn't submit Quiz 1 or Quiz 2 ...
- 3) If you didn't send me the student survey assigned in Lesson 1 ...
- 4) If you haven't made a forum post ...

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

Email: risimms@cabrillo.edu

Passwords

passwd command

Change user's password

Syntax:

passwd [username]

Example:

```
/home/cis90/simmsben $ passwd  
Changing password for user simben90.  
Changing password for simben90  
(current) UNIX password:   
New UNIX password:   
Retype new UNIX password:   
passwd: all authentication tokens updated successfully.  
/home/cis90/simmsben $
```

*Note, the passwords
are not echoed as
you type them.*

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

Subtle Stuff

Who else is logged in?

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

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

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




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

Basic options for your PuTTY session

Specify the destination you want to connect to

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

Connection type:

☐ Raw ☐ Telnet ☐ Rlogin ☒ SSH ☐ Serial

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

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

Basic options for your PuTTY session

Specify the destination you want to connect to

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

Connection type:

☐ Raw ☐ Telnet ☐ Rlogin ☒ SSH ☐ Serial

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

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

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



ssh arya-XX vs ssh cis90@arya-XX

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

```

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

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

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

*Benji is logged in as simben90 on Opus-II tries and fails to **ssh** into Arya-35 as simben90*

*Benji is logged in as simben90 on Opus-II tries and succeeds to uses **ssh** into Arya-35 as cis90*


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

type and man caveats

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

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

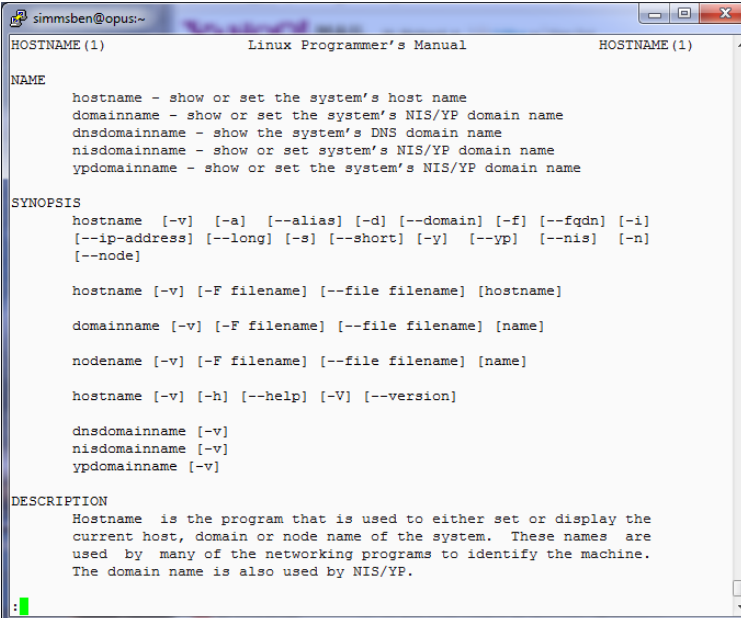
*The hostname program file is
in the /usr/bin directory*



type and man caveats

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

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



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

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

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

hostname [-v] [-F filename] [--file filename] [hostname]
domainname [-v] [-F filename] [--file filename] [name]
nodename [-v] [-F filename] [--file filename] [name]
hostname [-v] [-h] [--help] [-V] [--version]

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

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

Command Review

However,

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

type and man caveats

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

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

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

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

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

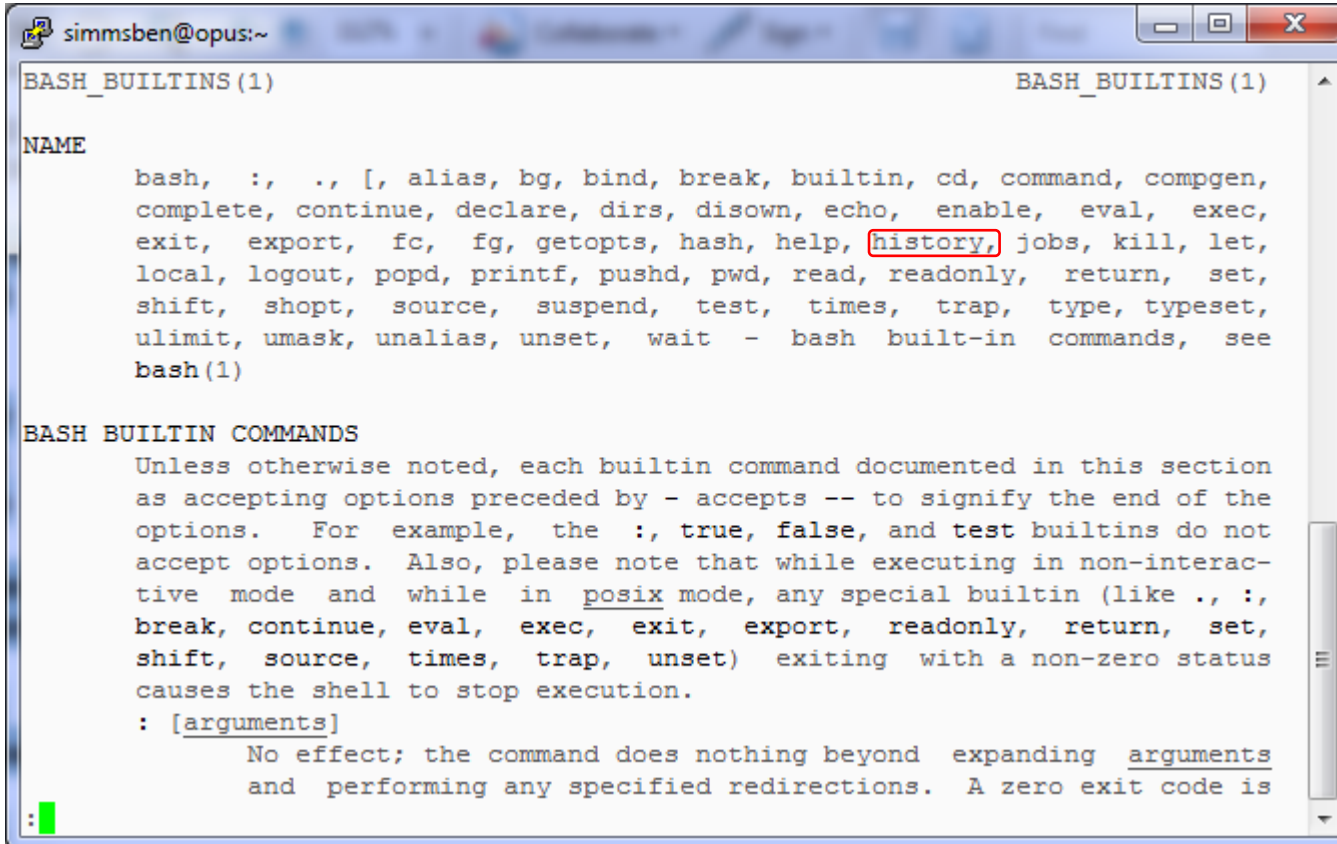
*The **ls** command is aliased, use the **-a** option on the **type** command to find where the command resides on the path*

type and man caveats

```
/home/cis90/simben $ type history
history is a shell builtin
```

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

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



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

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

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

Either scroll down or use /history

Path (from Lesson 2)

Life without a path

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

Mini Review

Expectation Check

Commands you should understand and be comfortable using

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

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

Class Activity

In what file are all the encrypted passwords kept?

Put your answer in the chat window

ssh command

Syntax:

ssh -p *port username@hostname*

Examples:

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

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

Syntax shortcuts:

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

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

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

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

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

```
ssh daughter
```

The ssh command is used to log into a remote system

Class Activity

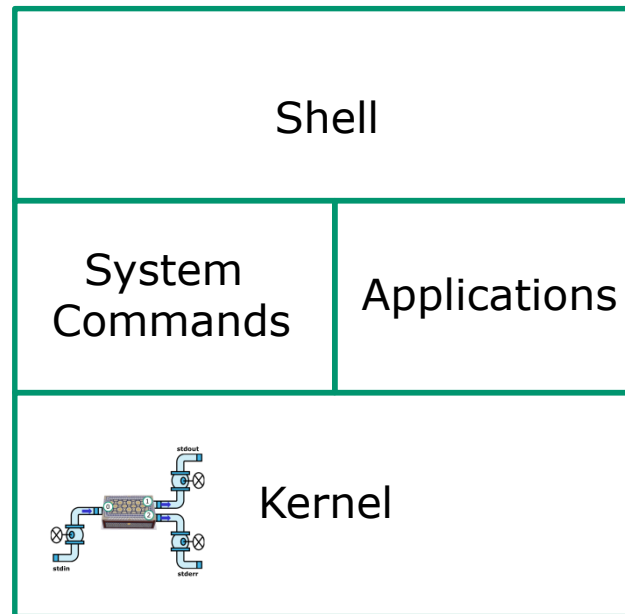
ssh to the Rhea system (port 22) and login as the cis90 user.

Which terminal device are you using on Rhea?

Put your answer in the chat window

Key components of the Linux/UNIX architecture

Users interact with the shell to run commands



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

Web servers, databases, word processors, etc.



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

Class Activity

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

What kernel is running on Rhea?

Put your answer in the chat window

Class Activity

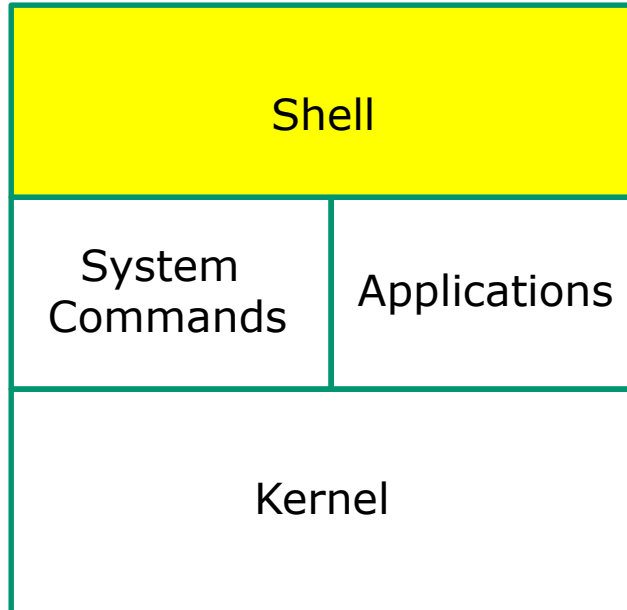
If you haven't already, ssh to the Rhea system (port 22) and login as cis90.

What shell is running on Rhea?

Put your answer in the chat window



Life of the Shell



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



Class Activity

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

As the cis90 user on Rhea enter this command:

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

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

Put your answer in the chat window?

Class Activity

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

As the cis90 user on Rhea enter this command:

```
ls -z /bin
```

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

Put your answer in the chat window?

Class Activity

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

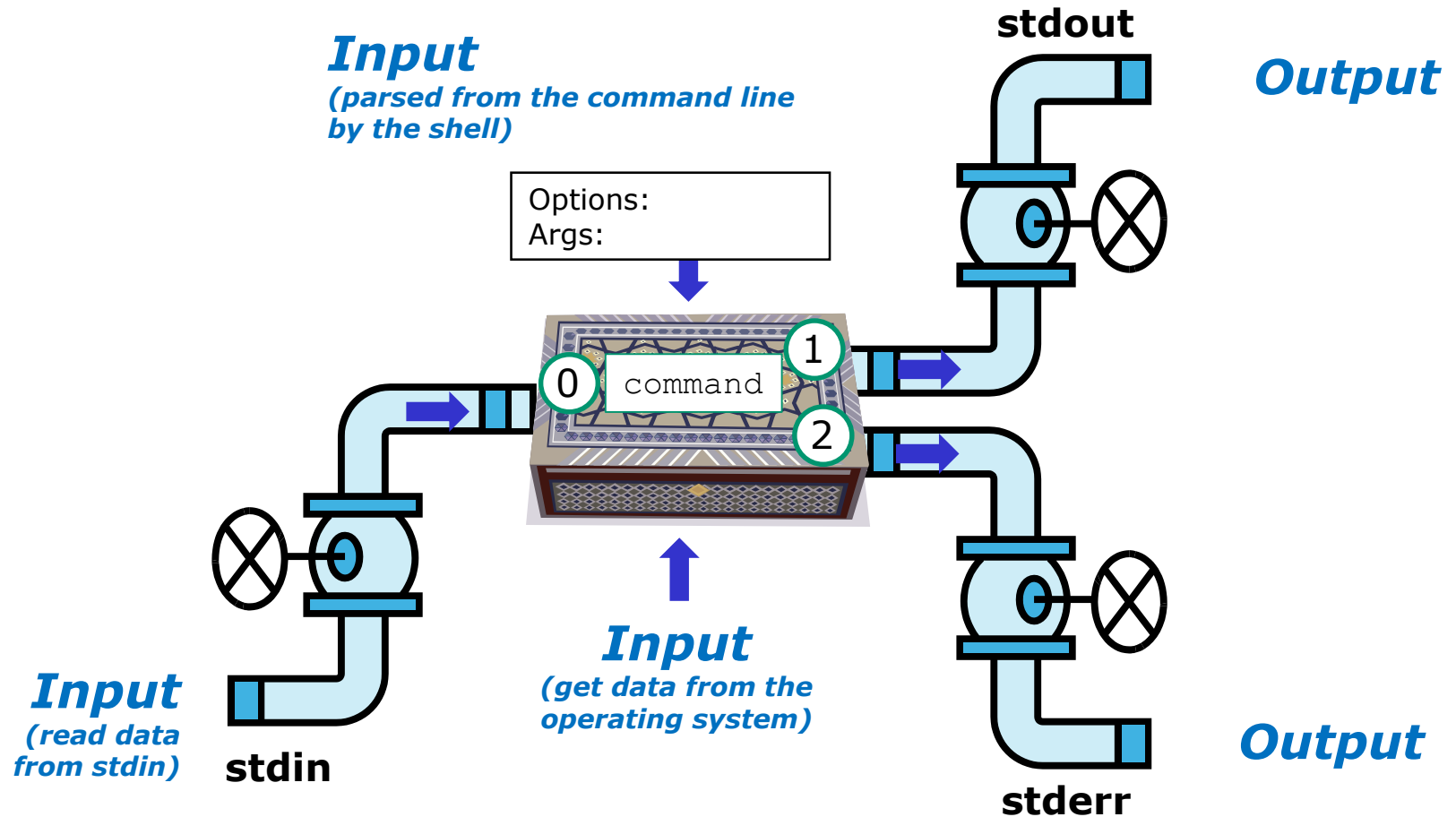
As the cis90 user on Rhea enter this command:

```
lls -z /bin
```

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

Put your answer in the chat window?

Inputs and Outputs



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

Class Activity

As the cis90 user on Rhea enter this command:

```
banner Hola
```

Where does the **banner** command on Rhea get it's input from?

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

Put your answer in the chat window

Answer

In what file are all the encrypted passwords kept?

/etc/shadow

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

Which terminal device are you using on Rhea?

```
/dev/pts/0
```

67

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

What kernel is running on Rhea?

```
/home/cis90/simben $ ssh cis90@rhea
Password for cis90@rhea:
Last login: Tue Feb  9 15:32:36 2016 from opus.cis.cabrillo.edu
FreeBSD 10.0-RELEASE-p18 (GENERIC) #0: Wed Feb 25 01:08:00 UTC 2015
```

< snipped >

```
$ uname
```

FreeBSD

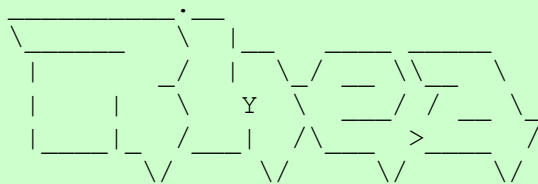
Free BSD kernel

Class Activity

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

What shell is running on Rhea?

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



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

The sh (Bourne shell) is running on Rhea

Answer

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

As the cis90 user on Rhea enter this command:

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

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

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

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

Class Activity

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

As the cis90 user on Rhea enter this command:

```
ls -z /bin
```

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

```
$ ls -z /bin
ls: illegal option -- z
usage: ls [-ABCFGHILPRSTUWZabcdefghiklmnopqrstuwxy1,] [-D format] [file ...]
$
```

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

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

Class Activity

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

As the cis90 user on Rhea enter this command:

```
lls -z /bin
```

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

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

1) Prompt

2) Parse

3) Search

4) Execute

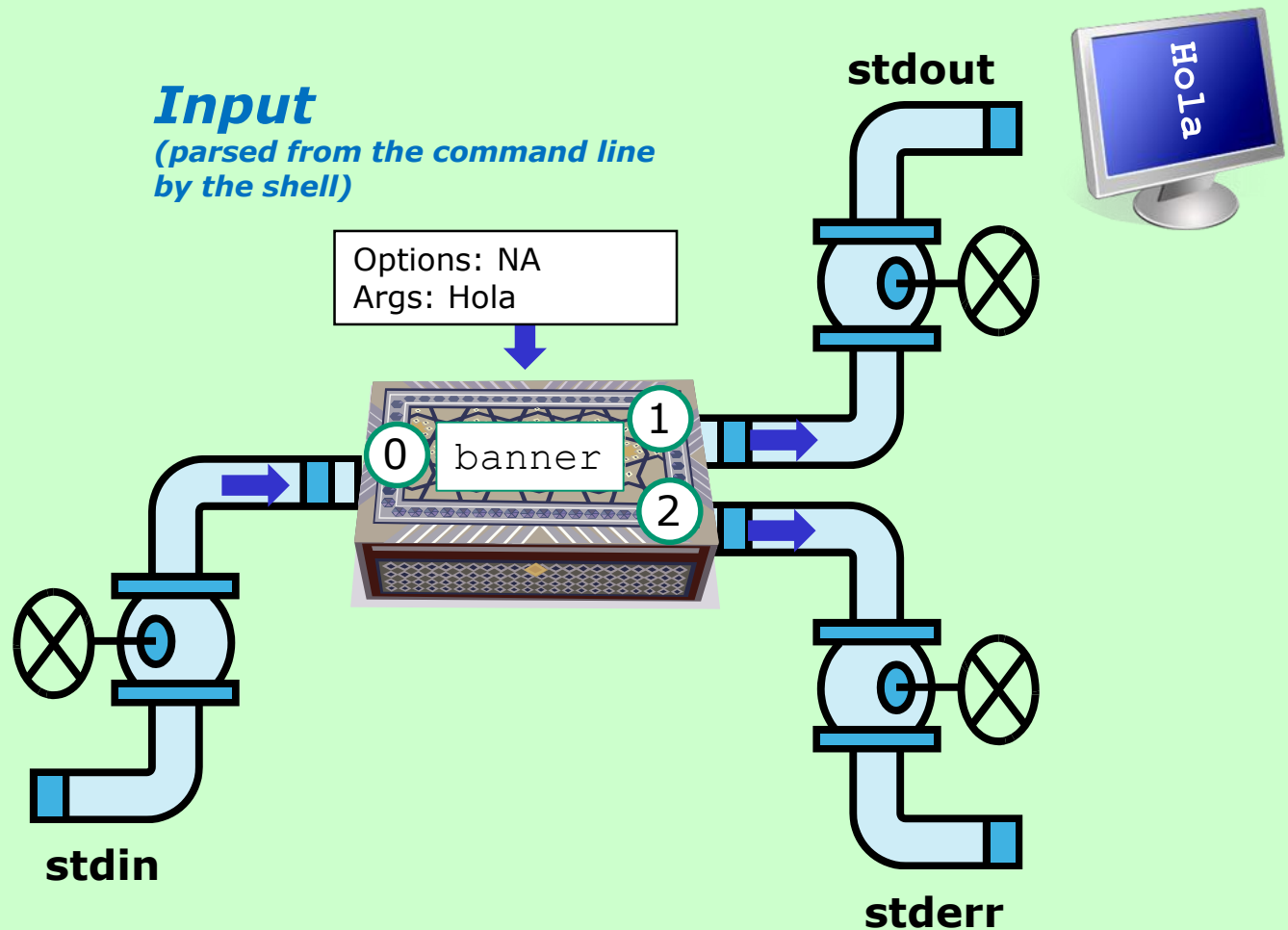
5) Nap

6) Repeat

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

Answer

\$ **banner Hola**



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

Practice Questions sun-hwa-iii

My favorite ice cream shop



Source: http://attractions.uptake.com/blog/files/2008/10/dsc_0002.jpg

Practice Test Questions

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

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

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

username: *same as your Opus-II username*

port: 22

Write your command in the chat window

Practice Test Questions

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

Copy your ice cream flavor into the chat window.

Practice Test Questions

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

Write your answer in the chat window

Practice Test Questions

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

Write your answer in the chat window

Practice Test Questions

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

Write your answer in the chat window

Practice Test Questions

Is **icecream** a standard UNIX command?

Write your answer in the chat window

Practice Test Questions

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

Write your answer in the chat window

Practice Test Questions

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

Write your answer in the chat window

Answer

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

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

username: *same as your Opus-II username*

port: 22

Answer: ssh sun-hwa-iii

Answer

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

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

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

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

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

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

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

Answer

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

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

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

Answer: BASH shell script

Answer

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

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

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

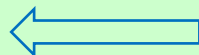
```
simben90@Sun-Hwa-III:~$ echo $PATH  
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games
```

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

Answer: Two

1) /usr/local/sbin

2) /usr/local/bin



Answer

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

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

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

```
No manual entry for icecream
```

```
See 'man 7 undocumented' for help when manual pages are not available.
```

Answer: NO

Answer

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

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

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

Answer: Linux

Answer

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

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

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

Answer: Ubuntu 14.04

Terminals

Hardware Terminals



Teletype (TTY)



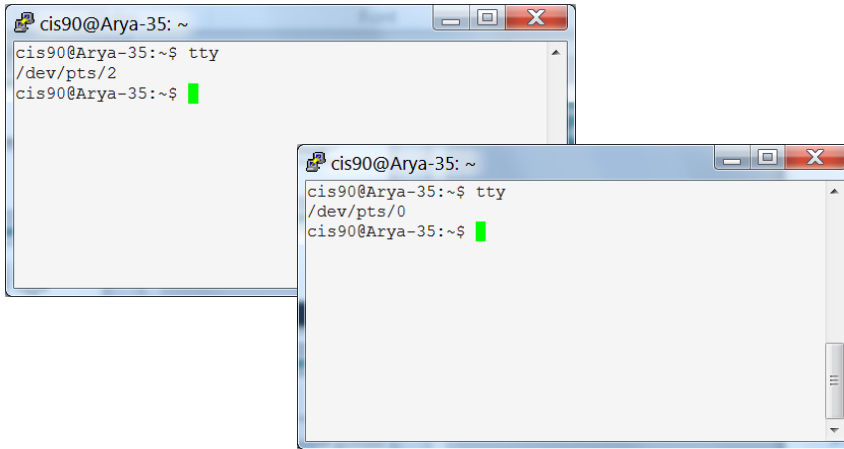
VT100



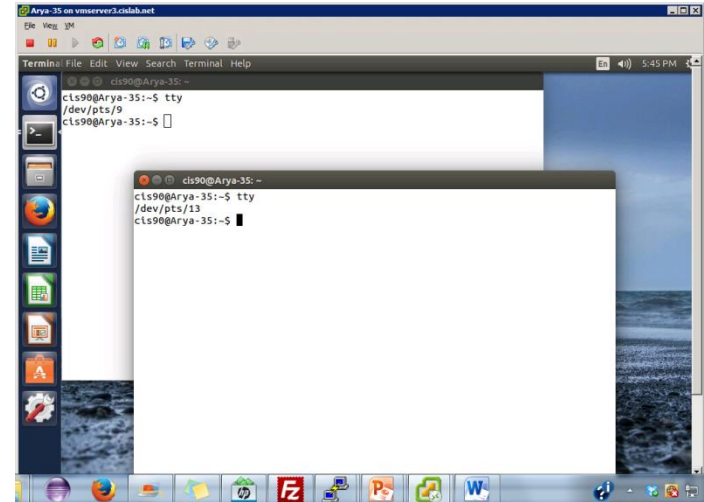
Terminals were used in the old days to interact with "minicomputers" and "mainframe" computers.

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

Software Terminals



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



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

Virtual terminals (use ctrl-alt-fn)

Bare bones, no scroll bars,
also called a console

```

Ubuntu 14.04.1 LTS Arya-35 tty2
Arya-35 login: cis90
Password:
Last login: Sat Sep  6 17:25:32 PDT 2014 on tty4
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-35-generic x86_64)

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

41 packages can be updated.
0 updates are security updates.

      _ _ _ _ _
     / _ _ _ _ \
    / _ _ _ _ \
   / _ _ _ _ \
  / _ _ _ _ \
 / _ _ _ _ \
/_ _ _ _ _ \
   _ _ _ _ _
   Winter is coming

cis90@Arya-35:~$ tty
/dev/tty2
cis90@Arya-35:~$ _
    
```

```

Ubuntu 14.04.1 LTS Arya-35 tty4
Arya-35 login: cis90
Password:
Last login: Sat Sep  6 17:24:59 PDT 2014 on tty2
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-35-generic x86_64)

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

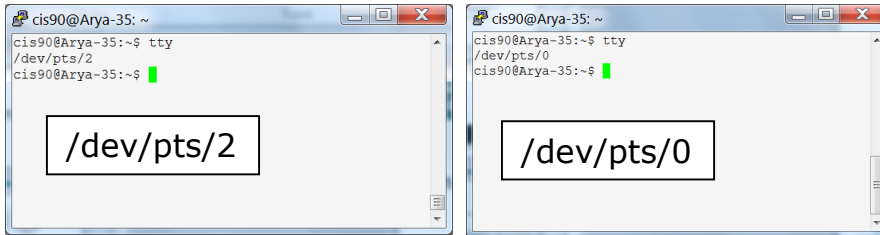
41 packages can be updated.
0 updates are security updates.

      _ _ _ _ _
     / _ _ _ _ \
    / _ _ _ _ \
   / _ _ _ _ \
  / _ _ _ _ \
 / _ _ _ _ \
/_ _ _ _ _ \
   _ _ _ _ _
   Winter is coming

cis90@Arya-35:~$ tty
/dev/tty4
cis90@Arya-35:~$ _
    
```

Various terminal devices on an Arya VM

Terminal emulators (e.g. Putty)



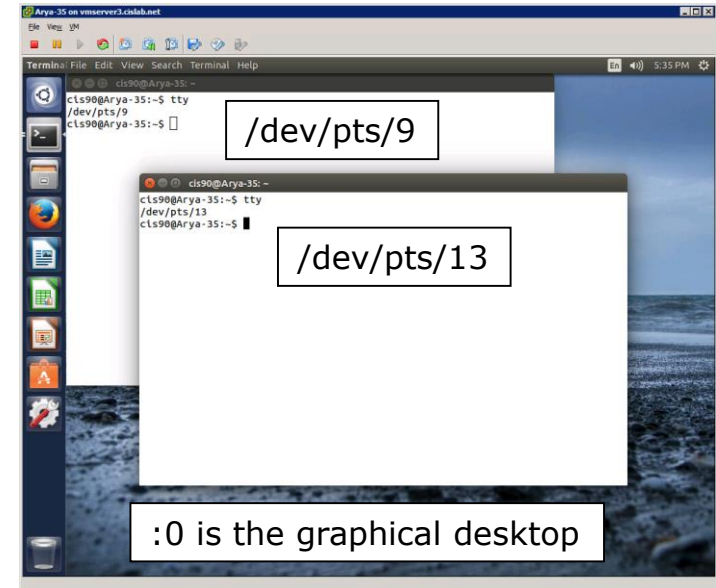
```
cis90@Arya-35:~$ who
cis90    tty4      2014-09-06 17:25
cis90    tty2      2014-09-06 17:25
cis90    pts/2      2014-09-06 17:20 (enterprise.cis.cabrillo.edu)
cis90    :0         2014-09-06 17:20 (:0)
cis90    pts/0      2014-09-06 17:21 (2601:9:6680:53b:4d09:e2b6:e7fc:d999)
cis90    pts/9     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

pts=pseudo terminal,

tty=teletype

:n=an X window display number

Graphical terminals on graphical desktop

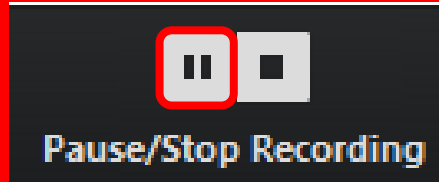


Virtual terminals



Housekeeping





Pause Recording

Audio Check

Roll Call

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

risimms@cabrillo.edu

Overlap Students

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



Resume/Stop Recording

Resume Recording

Audio Check

If you haven't already

Change your default password on Opus-II

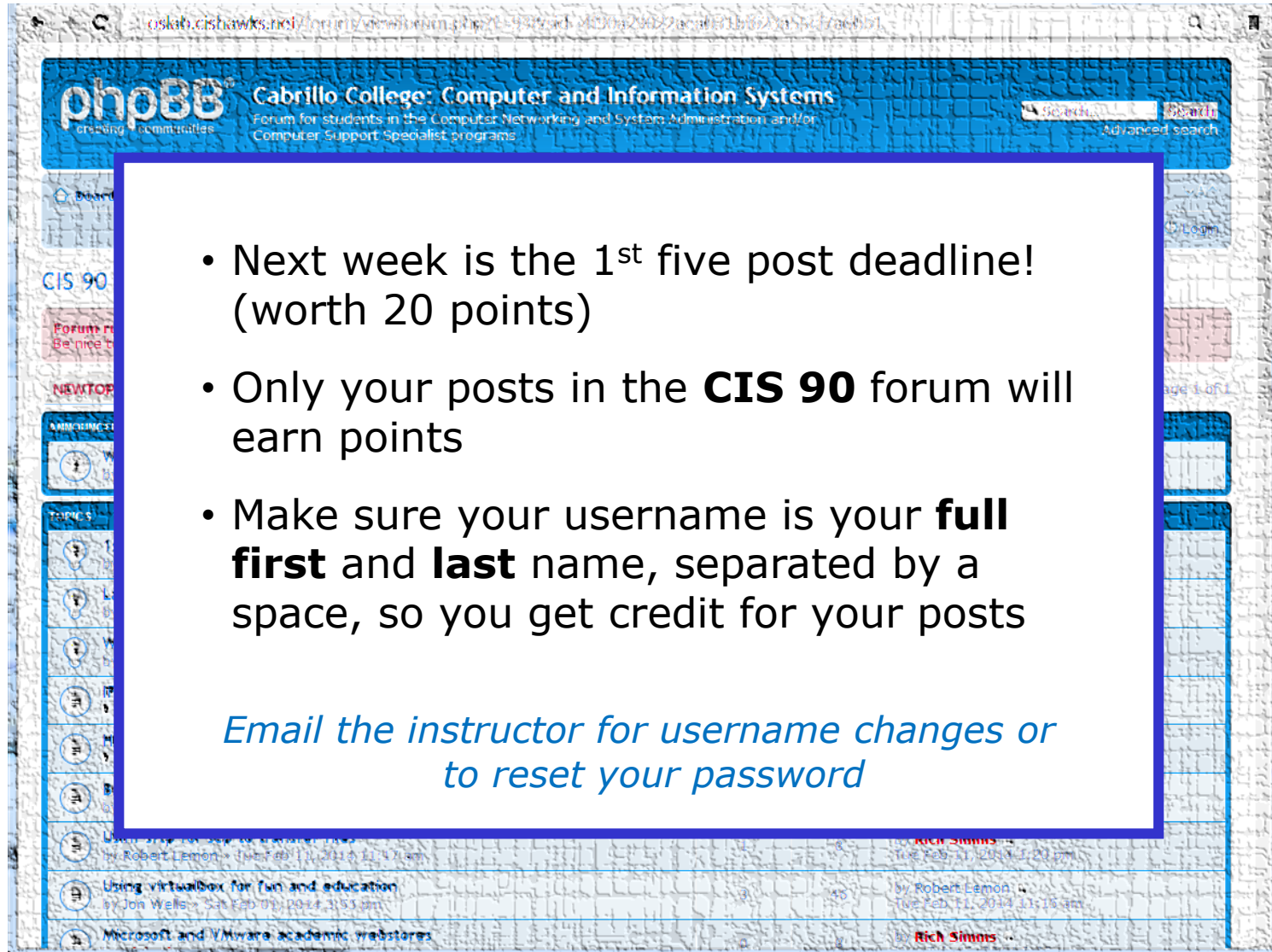
```
[simben90@opus-ii ~]$ passwd
Changing password for user simben90.
Changing password for simben90.
(current) UNIX password:
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[simben90@opus-ii ~]$
```



Lab 2 due tonight

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

Forum



oslab.cishawks.net/forum/viewtopic.php?id=93&search=0&highlight=CIS90&search=0

phpBB
creating communities

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

Search: **Search**
Advanced search

CIS 90

- Next week is the 1st five post deadline! (worth 20 points)
- Only your posts in the **CIS 90** forum will earn points
- Make sure your username is your **full first** and **last** name, separated by a space, so you get credit for your posts

Email the instructor for username changes or to reset your password

Forum: **CIS 90**
Be nice to the instructor

NEW TOPICS

ANNOUNCEMENTS

TOPICS

Using virtualbox for fun and education
by Jon Wells • Sat Feb 09, 2013 3:53 am

Microsoft and VMware academic webstores
by Rich Simons • Tue Feb 11, 2013 1:16 am

by Robert Lamon • Tue Feb 11, 2013 1:16 am

by Robert Lamon • Tue Feb 11, 2013 1:16 am



Note taker(s) wanted

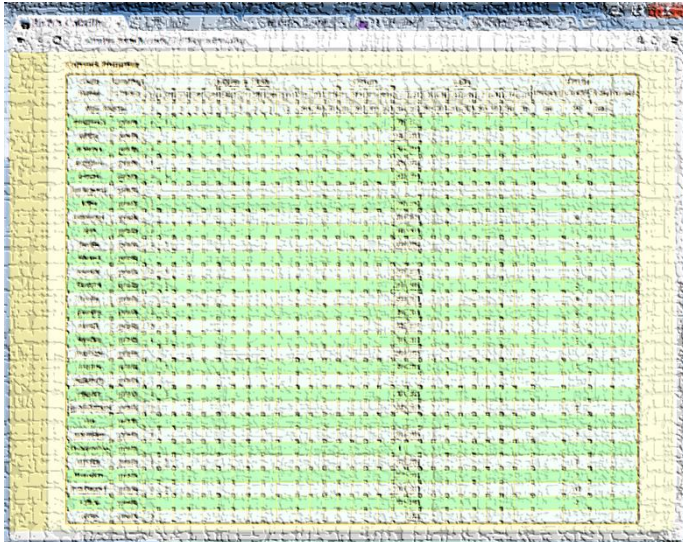
I'd like to add a web page for sharing student notes taken during class. This could be an electronic document or photo of handwritten notes.

Please contact me if you would be interested in doing this.

Monitoring your grades

Send me your survey to get your LOR code name.

The CIS 90 website

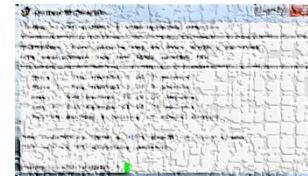


A screenshot of a web browser displaying a table of student grades. The table has multiple columns, including student names, IDs, and various grade categories. The rows are color-coded in alternating light green and light blue.

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

On Opus-II

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



Written by Jesse Warren a past CIS 90 Alumnus

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

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

Extra Credit

SS


SS

se. Another 90 points is available from **extra credit** assignments. Students c
erall progress on the chart below. Contact the instructor by email with any que

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

Typos and HowTo's

*Note the caps
on extra credit.*



Rich's Cabrillo College CIS Classes

CIS 90 Extra Credit

[Home](#)
[Resources](#)
[Forums](#)
[CIS Lab](#)
[CTC](#)

[Login](#)
[Flashcards](#)
[Admin](#)

[CIS 90](#)
[Previous Classes](#)

95 days till term ends!

[Cabrillo College](#)
[Web Advisor](#)
[CCC Confer](#)
[Static IPs](#)
[Quick Ref](#)
[VM Repairs](#)
[GAH!](#)

CIS 90 Extra Credit

[Course Home](#) [Grades](#)

General Options

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

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

Extra Credit

On the forum

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

On some labs

Extra credit (2 points)

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

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

In lesson slides (search for extra credit)



On the website

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

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

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

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

Extra Credit Howtos

Rich's Cabrillo College CIS Classes Resources

Home **Resources** Forums CIS Lab Canvas

Login
Flashcards
Admin

[CIS 90](#)
[Previous Terms](#)

103 days till term ends!

[Cabrillo College Web Advisor](#)

[VLab \(web\)](#)
[NETLAB+ VE](#)
[Annoying Issue List](#)

[CIS 90 VLab VM Assignments](#)

[RIP Dennis Ritchie](#)

General Links

Instructors <ul style="list-style-type: none"> Ed Gerlinde Jeffrey Jim John Michael Marcelo Rick Steve Sam at CCSF 	Getting Linux/UNIX <ul style="list-style-type: none"> Linux ISOs Kernels RPMs (rpmfind) RPMs (pbone) Academic Software for CIS Students <ul style="list-style-type: none"> Microsoft Webstore VMware Webstore Virtualization <ul style="list-style-type: none"> VirtualBox VMware ESXi and vSphere client Standards <ul style="list-style-type: none"> IEEE IETF (RFCs) Academics <ul style="list-style-type: none"> Cisco NetSpace 	Palo Alto Networks <ul style="list-style-type: none"> PAN commands Making Strong Passwords <ul style="list-style-type: none"> Password Haystack Ryan Riley Strong passwords Grammar <ul style="list-style-type: none"> Ultimate apostrophe flowchart Classical <ul style="list-style-type: none"> Valentina Lisitsa - Beethoven, Moonlight, 3rd Ji-Yong Kim - Beethoven, Moonlight, 3rd Valentina Lisitsa - Chopin, Polonaise op 53 Valentina Lisitsa - Rachmaninoff Piano Concerto No. 2
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Howtos

- [HowtoForge](#)
- [DNS](#)
- [Ethernet \(NIC drivers\)](#)
- [NFS](#)
- [NIS](#)
- [PPP](#)
- [Putty SSH Keys](#)

Student Howtos

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

Linux Commands

- [Practical](#)
- [Command](#)

Training and Tutorials

- [Linux Basics](#)

If you have a strong interest in a topic write a Howto on it to share what you've learned and earn some extra credit at the same time

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

Wifi Penetration
Wireless Communication and Computer/Network Forensics

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

Linux Howtos
Accessing VMware remotely via Linksys Router
Fall 2008

Assumptions

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

How to Install Virtual Box
Marcos Padellaro

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

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

To get notifications of new forum posts

Subscribe to the forum to get email notifications of new posts

After logging in:

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

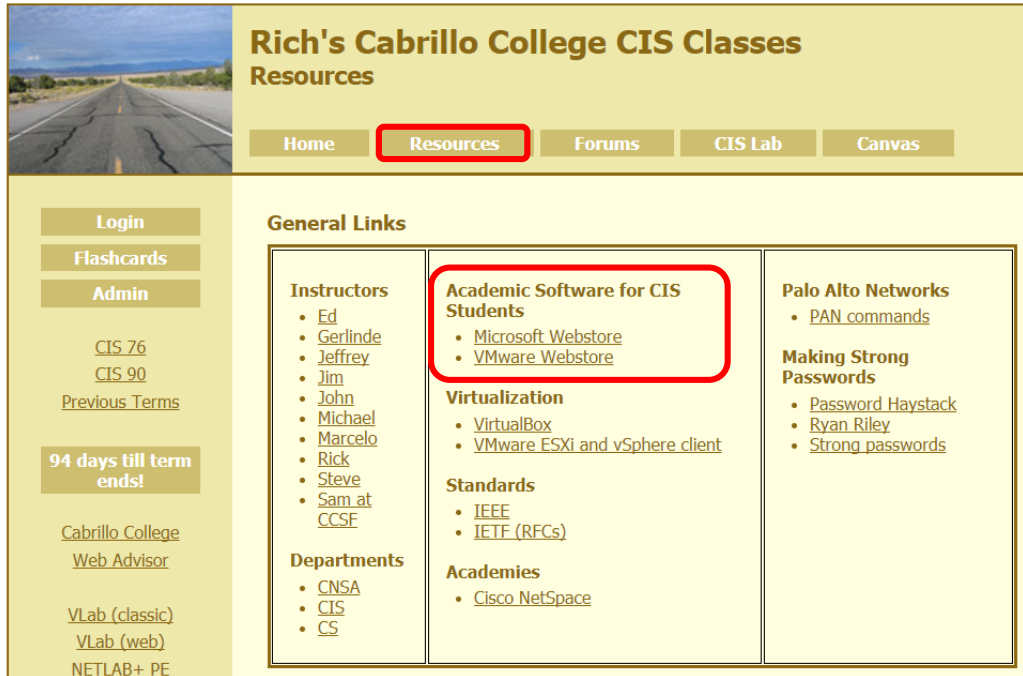
[Home](#) < [Board index](#) ☒ [Subscribe forum](#)

*Unsubscribed
looks like this.*

[Home](#) < [Board index](#) ☐ [Unsubscribe forum](#)

*Subscribed
looks like this.*

Software for eligible CIS students



Rich's Cabrillo College CIS Classes Resources

Home Resources Forums CIS Lab Canvas

Login
Flashcards
Admin

CIS 76
CIS 90
Previous Terms

94 days till term ends!

Cabrillo College
Web Advisor

VLab (classic)
VLab (web)
NETLAB+ PE

General Links

Instructors <ul style="list-style-type: none">EdGerlindeJeffreyJimJohnMichaelMarceloRickSteveSam at CCSF Departments <ul style="list-style-type: none">CNSACISCS	Academic Software for CIS Students <ul style="list-style-type: none">Microsoft WebstoreVMware Webstore Virtualization <ul style="list-style-type: none">VirtualBoxVMware ESXi and vSphere client Standards <ul style="list-style-type: none">IEEEIETF (RFCs) Academies <ul style="list-style-type: none">Cisco NetSpace	Palo Alto Networks <ul style="list-style-type: none">PAN commands Making Strong Passwords <ul style="list-style-type: none">Password HaystackRyan RileyStrong passwords
---	--	---

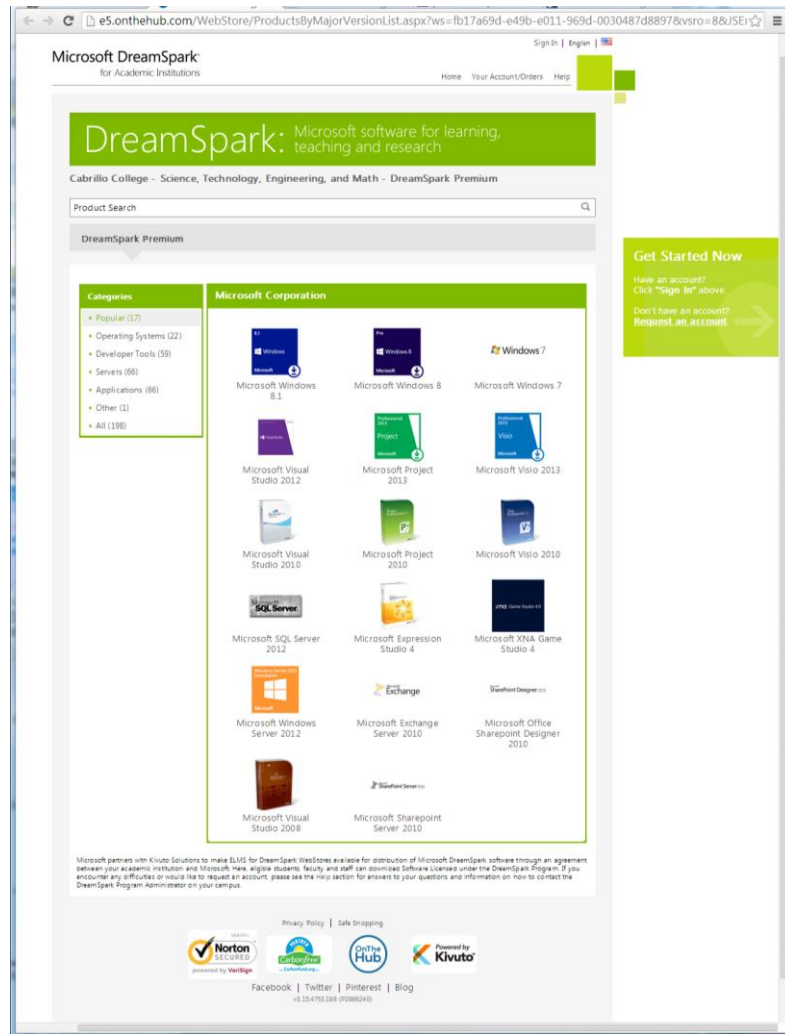


How to obtain Microsoft and VMware software for academic use



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

Microsoft products for CIS students



Accounts for students enrolled in CIS 90 have been created using your WebAdvisor email addresses. Follow the instructions in the email you receive.

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

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

General Links

Instructors

- Ed
- Gerlinde
- Jeffrey
- Jim

Academic Software for CIS Students

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

Palo Alto Networks

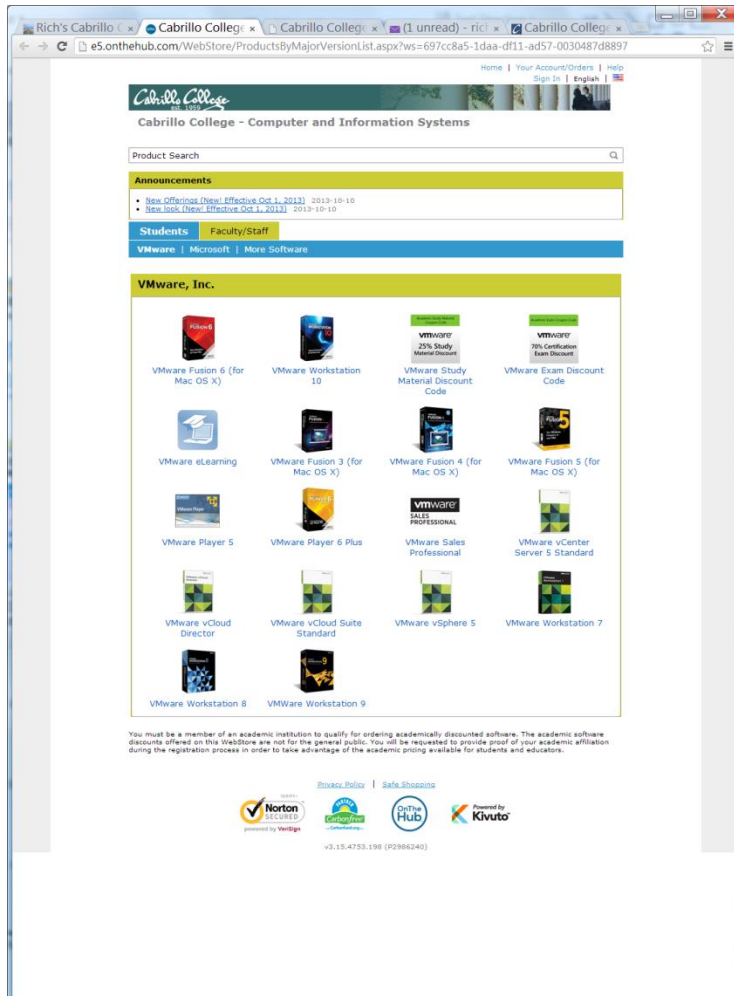
- [PAN commands](#)

Making Strong Passwords

Licensed for educational use only.

Happy downloading!

VMware products for CIS students



Accounts for students enrolled in CIS 90 have been created using your WebAdvisor email addresses. Follow the instructions in the email you receive.

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

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

General Links

Instructors

- Ed
- Gerlinde
- Jeffrey
- Jim

Academic Software for CIS Students

- Microsoft Webstore
- VMware Webstore

Palo Alto Networks

- PAN commands

Making Strong Passwords

Licensed for educational use only.

Happy downloading!



Course Expectations Check

Expectation Check

Skills you should be comfortable performing

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

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

Navigating systems

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

Using the shell

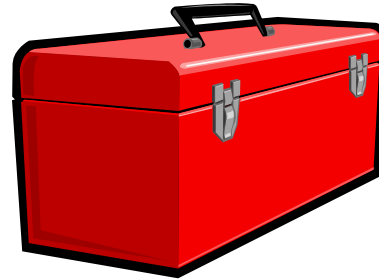
- Use any of the Lesson 1 and 2 commands
- Parse any shell command
- Get documentation on any command
- Identify the four key components of the UNIX/Linux architecture
- Identify the six steps the shell performs for every command
- Temporarily change your shell prompt
- Set and show values of shell variables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

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

Notes to Rich



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



More commands for your toolbox



Lesson 3 commands for your toolbox

write

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

mesg

- enable/disable writes to your terminal

irssi

- Chat using IRC protocol

mail

- send and read email



Write Command

write command

send a message to another user

Syntax:

write *username* [*ttyname*]

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

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

- Each line you type gets sent to the other user's terminal
- To end sending message type Ctrl-D (Hold down Ctrl and tap D key)
 - The receiver will see an EOF (end of file) at the end
- If the receiver wants to reply then they must use the **write** command as well
- Use **mesg n** (to block incoming messages)
- Use **mesg y** (to allow incoming messages)

Use the write command to chat with another user



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

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

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

write milhom90

What's up?

Sure, meet you in the park in 5 mins

<Ctrl-D>

write simben90

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

OK

<Ctrl-D>

write command

send a message to another user

Where is the write command?

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

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

What kind of file is the write command?

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

Answer: It's a binary executable

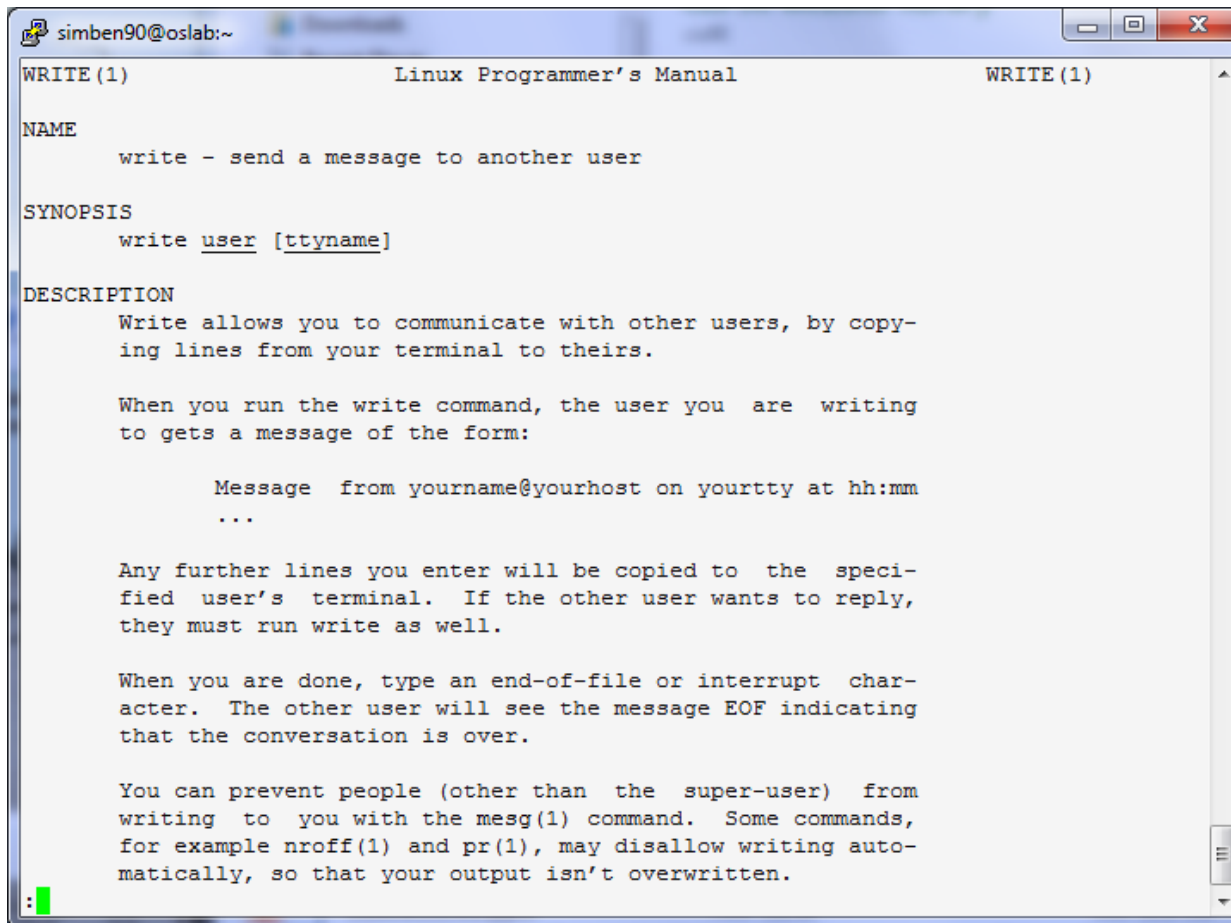
ELF = Executable and Linkable Format

LSB=Least Significant Bit type of bit order

write command

send a message to another user

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



The screenshot shows a terminal window titled 'simben90@oslab:~'. The terminal displays the output of the 'man write' command. The output is formatted as a man page with sections: NAME, SYNOPSIS, and DESCRIPTION. The NAME section states 'write - send a message to another user'. The SYNOPSIS section shows 'write user [ttyname]'. The DESCRIPTION section explains that 'write' allows communication with other users by copying lines from the terminal to theirs. It also shows the format of the message received: 'Message from yourname@yourhost on yourtty at hh:mm' followed by three dots. The terminal window has a standard Linux desktop environment with window controls at the top.

```
simben90@oslab:~  
WRITE (1)                                Linux Programmer's Manual                                WRITE (1)  
  
NAME  
    write - send a message to another user  
  
SYNOPSIS  
    write user [ttyname]  
  
DESCRIPTION  
    Write allows you to communicate with other users, by copy-  
    ing lines from your terminal to theirs.  
  
    When you run the write command, the user you are writing  
    to gets a message of the form:  
  
        Message from yourname@yourhost on yourtty at hh:mm  
        ...  
  
    Any further lines you enter will be copied to the speci-  
    fied user's terminal. If the other user wants to reply,  
    they must run write as well.  
  
    When you are done, type an end-of-file or interrupt char-  
    acter. The other user will see the message EOF indicating  
    that the conversation is over.  
  
    You can prevent people (other than the super-user) from  
    writing to you with the mesg(1) command. Some commands,  
    for example nroff(1) and pr(1), may disallow writing auto-  
    matically, so that your output isn't overwritten.
```

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

Supplemental write example

write command

simben90 writes to milhom90



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

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



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

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

write command

simben90 writes to milhom90



```
/home/cis90/simben $ write milhom90
```

1) Benji enters this

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



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

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

2) Homer sees this appear on his terminal

write command

simben90 writes to milhom90



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

1) Benji enters this



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

2) Homer sees this appear on his terminal

write command

simben90 writes to milhom90



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

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

```
What do you think of the new CentOS distro?
```

```
write simben90
```

1) Homer enters this



```
/home/cis90/simben $ write milhom90
```

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

```
What do you think of the new CentOS distro?
```

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

2) and Benji sees this appear on his terminal

write command

simben90 writes to milhom90



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

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

```
What do you think of the new CentOS distro?
```

```
write simben90
```

```
What's with the periods on the long listing permissions?
```

1) Homer enters this



```
/home/cis90/simben $ write milhom90
```

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

```
What do you think of the new CentOS distro?
```

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

```
What's with the periods on the long listing permissions?
```

2) and Benji sees this appear on his terminal

write command

simben90 writes to milhom90



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

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

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

1) Benji enters this



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

2) Homer sees this appear on his terminal 130

write command

simben90 writes to milhom90



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

1) Homer enters this



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

2) and Benji sees this appear on his terminal

write command

simben90 writes to milhom90



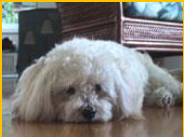
```
/home/cis90/milhom $  
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...  
What do you think of the new CentOS distro?  
write simben90  
What's with the periods on the long listing permissions?  
I think it's SELinux  
Talk to you later, I'm going to bark a little and take a nap  
Ctrl-D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



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

write command

simben90 writes to milhom90



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

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

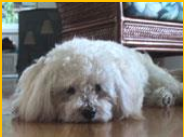
bye ← 1) *Benji enters this*



```
/home/cis90/milhom $
Message from simben90@oslab.cabrillo.edu on pts/1 at 09:52 ...
What do you think of the new CentOS distro?
write simben90
What's with the periods on the long listing permissions?
I think it's SELinux
Talk to you later, I'm going to bark a little and take a nap
/home/cis90/milhom $ bye ← 2) Homer sees this written to his terminal
```

write command

simben90 writes to milhom90



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

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

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

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



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

2) and Homer sees this appear on his terminal

Class Activity

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

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

Note to Rich:

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

mesg command

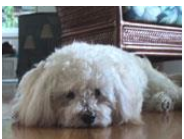
mesg y enables and **mesg n** disables writes to your terminal



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



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



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

2) Benji discovers that Homer is no longer accepting messages

who command

The -T option shows who is writeable

The -T option shows users messages status

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

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

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

We will learn about file wildcards and permissions later.

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

IRC

irssi

Chat with multiple users via IRC server

Syntax:

irssi

/connect *hostname*

Connect to IRC server

/join *#channel*

Join channel

/part

Leave channel

/nick *your-nickname*

Set your display name

/names

See others in channel

message

Public chat message

/msg *nickname message*

Private chat message

alt **1**

Main window

alt **2**

Public chat window

alt **3**

Private chat window

/disconnect

Disconnect from IRC server

/exit or /quit

Exit irssi

Follow me

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

`irssi`

`/connect eh-irc`

`/join #cis90`

`/nick Benji`

`Hello world`

`/names`

`/msg Benji Hey Benji`

1

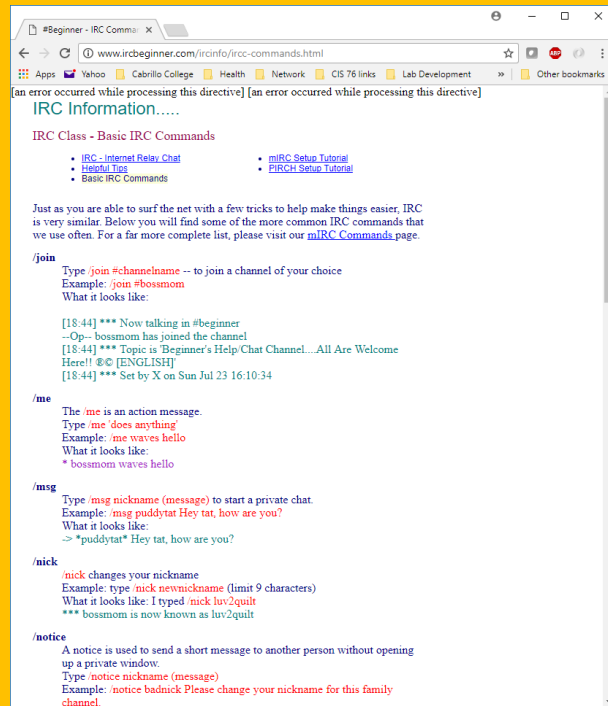
2

3

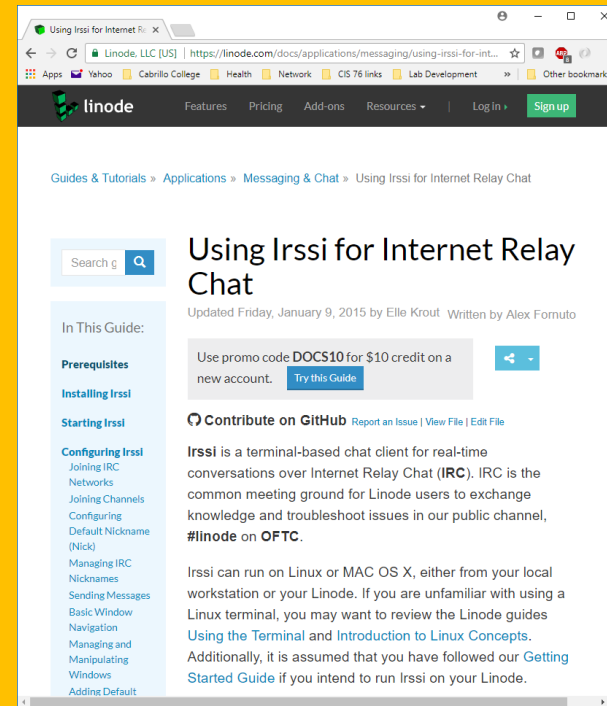
`/exit or /quit`

Use your own name here

irssi Supplemental Reading



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



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

Basic Mail

Sending Mail

UNIX mail

Sending messages

mail *recipient1 recipient2 ... recipientN*

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

Examples:

mail rsimms *username as argument*

mail simben90 prites90 mcgmon90 *multiple usernames as arguments*

mail richsimms@yahoo.com feredu90 *regular email address and
username as arguments*

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

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

UNIX mail

Sending messages

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

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

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

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

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

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

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

The mailx program is a binary executable.

UNIX mail

Sending messages

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

Homer
(milhom90)



Rich
(richsimms@yahoo.com)



Benji
(simben90)

```
/home/cis90/simben $ mail milhom90 richsimms@yahoo.com
```

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

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

```
Thanks,
```

```
Benji
```

```
.
```

```
EOT
```

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

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

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

Class Exercise

UNIX mail

- Login to Opus-II
- Send me a message

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

Notes to Rich



[] - Send out Welcome letter

use **welcome** alias or

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

[] - Test cis90-students alias

Reading Mail

UNIX mail

Reading messages

Syntax:

mail

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

UNIX Mail

Reading messages



Homer
(milhom90)

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

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

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

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

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

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

```
>N 1 Benji Simms Tue Sep 11 12:59 22/830 "Where is the old bone"
```

```
& 1
```

He types 1 to read message 1

```
Message 1:
```

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

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

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

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

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

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

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

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

```
Status: R
```

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

```
Thanks,
```

```
Benji
```

The N signifies a new message

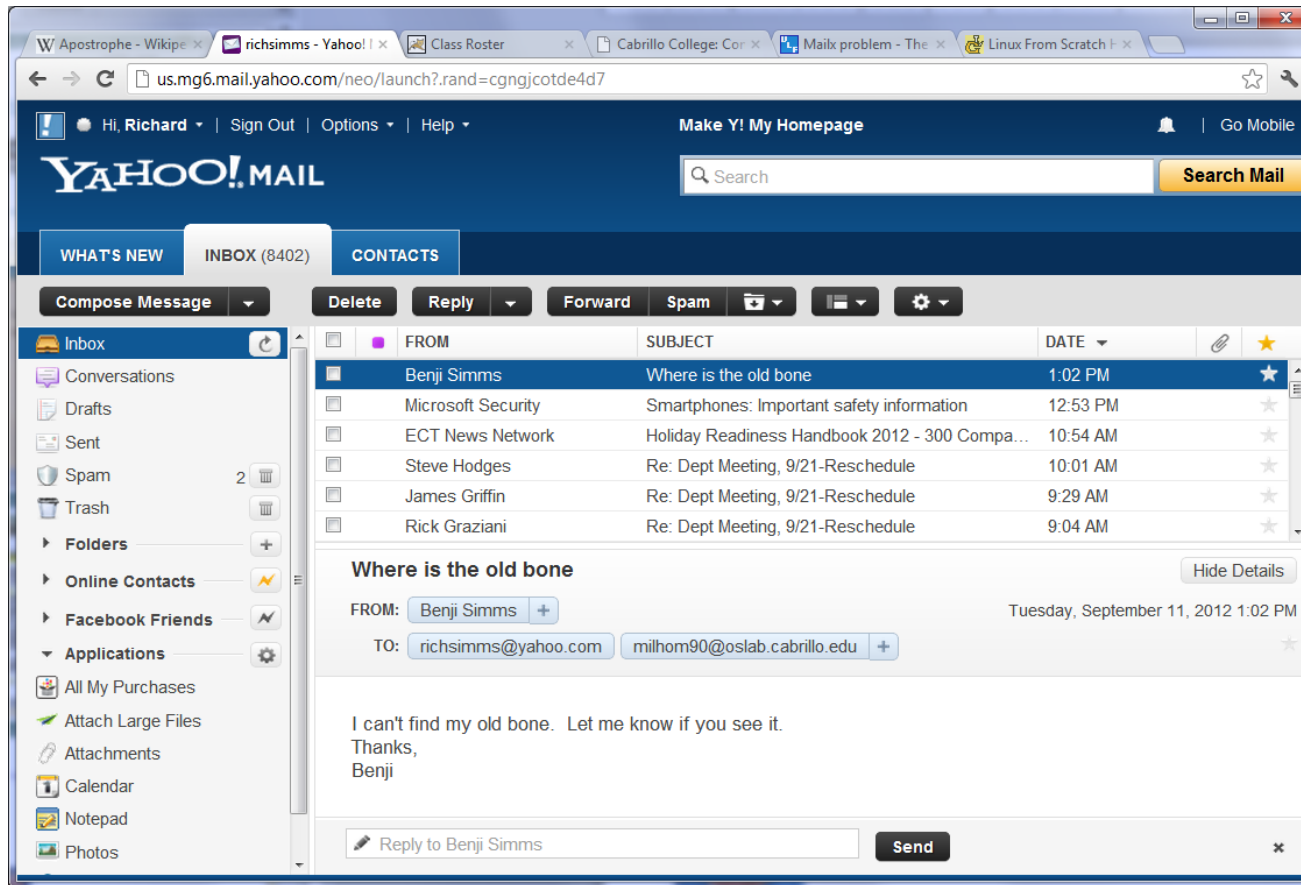
The & is the mail prompt

UNIX mail

Reading messages sent from UNIX mail



Rich
(richsimms@yahoo.com)



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

Class Exercise

UNIX mail

- Read your own mail by typing the **mail** command by itself
- Enter the number of the message to print a message.
1
2
- Use the **q** command to exit

Tip: You can just hit the Enter key by itself to read the next unread message.

Replying to Mail

UNIX Mail

Replying to messages



Homer
(milhom90)

< continued from above >

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

& **r 1**
To: milhom90@oslab.cabrillo.edu richsimms@yahoo.com
simben90@oslab.cabrillo.edu
Subject: Re: Where is the old bone

Benji Simms <simben90@oslab.cabrillo.edu> wrote:

> I can't find my old bone. Let me know if you see it.
> Thanks,
> Benji

**I think its under the sink
- Homer**

.

EOT

&

*After reading the message
from Benji, Homer replies
with the mail **r** command
(for reply to all).*

UNIX Mail

Benji gets the reply from Homer



Benji
(simben90)

```
You have mail in /var/spool/mail/simben90
/home/cis90/simben $ mail
Heirloom Mail version 12.4 7/29/08.  Type ? for help.
"/var/spool/mail/simben90": 1 message 1 unread
>U 1 Homer Miller          Tue Sep 11 13:35  30/1096  "Re: Where is the old bone"
& 1
Message 1:
From milhom90@oslab.cabrillo.edu  Tue Sep 11 13:35:30 2012
Return-Path: <milhom90@oslab.cabrillo.edu>
From: Homer Miller <milhom90@oslab.cabrillo.edu>
Date: Tue, 11 Sep 2012 13:35:30 -0700
To: simben90@oslab.cabrillo.edu, richsimms@yahoo.com,
    milhom90@oslab.cabrillo.edu
Subject: Re: Where is the old bone
User-Agent: Heirloom mailx 12.4 7/29/08
Content-Type: text/plain; charset=us-ascii
Status: RO

Benji Simms <simben90@oslab.cabrillo.edu> wrote:

> I can't find my old bone.  Let me know if you see it.
> Thanks,
> Benji
I think its under the sink
- Homer
```

*Benji notices he
has new mail
which he reads
using the mail
command (with no
arguments) and
then typing the
message number
he wants to read*



Rich
(richsimms@yahoo.com)

UNIX Mail

The screenshot shows a web browser window with multiple tabs. The active tab is 'richsimms - Yahoo! Mail'. The address bar shows 'us.mg6.mail.yahoo.com/neo/launch?rand=cgngjcotde4d7'. The page header includes 'Hi, Richard', 'Sign Out', 'Options', 'Help', 'Make Y! My Homepage', and 'Go Mobile'. The main header features the 'YAHOO! MAIL' logo and a search bar. Below the header, there are tabs for 'WHAT'S NEW', 'INBOX (8403)', and 'CONTACTS'. A toolbar contains buttons for 'Compose Message', 'Delete', 'Reply', 'Forward', 'Spam', and settings. The left sidebar lists folders like 'Inbox', 'Conversations', 'Drafts', 'Sent', 'Spam', 'Trash', and various applications. The main content area displays an email list with columns for 'FROM', 'SUBJECT', and 'DATE'. The selected email is 'Re: Where is the old bone' from 'Homer Miller' at 1:38 PM. The message body shows a reply from 'Benji Simms <simben90@oslab.cabrillo.edu>' with the text: '> I can't find my old bone. Let me know if you see it. > Thanks, > Benji I think its under the sink - Homer'. At the bottom, there is a 'Reply to Homer Miller' button and a 'Send' button.

*Since Homer
replied to all,
Rich also gets a
copy*

Class Exercise

UNIX mail

- Use **ls /home/cis90** to see all CIS 90 home directories (add "90" to get the usernames)
- Use the **who** command and send an email to three other CIS 90 students (your choice) in one message.

Hint: use **mail** *user1 user2 user3*

- Reply to any emails you get (run **mail** and use the **r** command)

Saving Mail to a Folder

UNIX Mail

Saving messages

```
/home/cis90/simben $ mail
Heirloom Mail version 12.4 7/29/08. Type ? for help.
"/var/spool/mail/simben90": 1 message 1 new
>N 1 Homer Miller      Tue Sep 11 21:04  21/830  "Salsa"
& 1
Message 1:
From milhom90@oslab.cabrillo.edu  Tue Sep 11 21:04:16 2012
Return-Path: <milhom90@oslab.cabrillo.edu>
From: Homer Miller <milhom90@oslab.cabrillo.edu>
Date: Tue, 11 Sep 2012 21:04:16 -0700
To: simben90@oslab.cabrillo.edu
Subject: Salsa
User-Agent: Heirloom mailx 12.4 7/29/08
Content-Type: text/plain; charset=us-ascii
Status: R

Don't forget, salsa class tonight at the Palomar
- Homer

& s 1 archives
"archives" [New file] 23/851
& q
```

Benji checks for new mail

Prints the first (and only) message

Saves this message to a folder named "archives"

Browsing a mailbox file (folder)

UNIX mail

Browse mailbox files using the -f option

use the f option to specify a mailbox file (folder)

```
/home/cis90/simben $ mail -f archives
Heirloom Mail version 12.4 7/29/08.  Type ? for help.
"archives": 5 messages 4 new
  1 Homer Miller      Tue Sep 11 21:04  22/841  "Salsa"
>N  2 Homer Miller      Tue Sep 11 21:25  20/790  "Hola"
  N  3 Rich Simms        Tue Sep 11 21:58  20/752  "Treasure"
    4 Rich Simms        Tue Sep 11 22:01  21/798  "Lab Hours on Monday"
  N  5 Rich Simms        Tue Sep 11 22:01  20/796  "Where were you last
summer?"
&
```

Opening a mailbox file named archives which has multiple messages

More on Mail

Forwarding Mail

mail commands

Forwarding a message with ~m

```
rsimms@opus:~$ mail
Mail version 8.1 6/6/93.  Type ? for help.
"/var/spool/mail/rsimms": 5 messages 1 unread
>U  1  jimg@opus.cabrillo.e  Sun Jun 22 13:53  22/836  "Hot days and servers"
    2  simmsmar@opus.cabril  Thu Jul 24 12:28  19/739  "Don't forget to bring"
    3  simmsben@opus.cabril  Thu Jul 24 12:27  17/708  "Nisene Hike"
    4  rsimms@opus.cabrillo  Thu Jul 24 12:33  21/819  "Re: Hot days and serv"
    5  roddyduk@opus.cabril  Thu Jul 24 15:41  19/702  "Salsa"
& m simmsben
Subject: re: Salsa
Hi Benji,

Did you see this:
~m5
Interpolating: 5
(continue)

Later,

- Rich
.
Cc:
&
```

*This is how
you forward
message 5*

```
simmsben@opus:~$ mail
/home/cis90/simmsben $ mail
Mail version 8.1 6/6/93.  Type ? for help.
"/var/spool/mail/simmsben": 1 message 1 new
>N  1  rsimms@opus.cabrillo  Thu Jul 24 18:51  33/935  "re: Salsa"
& p 1
Message 1:
From rsimms@opus.cabrillo.edu  Thu Jul 24 18:51:55 2008
Date: Thu, 24 Jul 2008 18:51:55 -0700
From: Rich Simms <rsimms@opus.cabrillo.edu>
To: simmsben@opus.cabrillo.edu
Subject: re: Salsa

Hi Benji,

Did you see this:

From roddyduk@opus.cabrillo.edu  Thu Jul 24 15:41:35 2008
Date: Thu, 24 Jul 2008 15:41:35 -0700
From: Duke Roddy <roddyduk@opus.cabrillo.edu>
To: rsimms@opus.cabrillo.edu
Subject: Salsa

You and Elizabeth coming to the Palomar this Friday?
Let me know,
- Duke

Later,

- Rich
&
```

mail commands

Alternate ways to forward a message

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

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

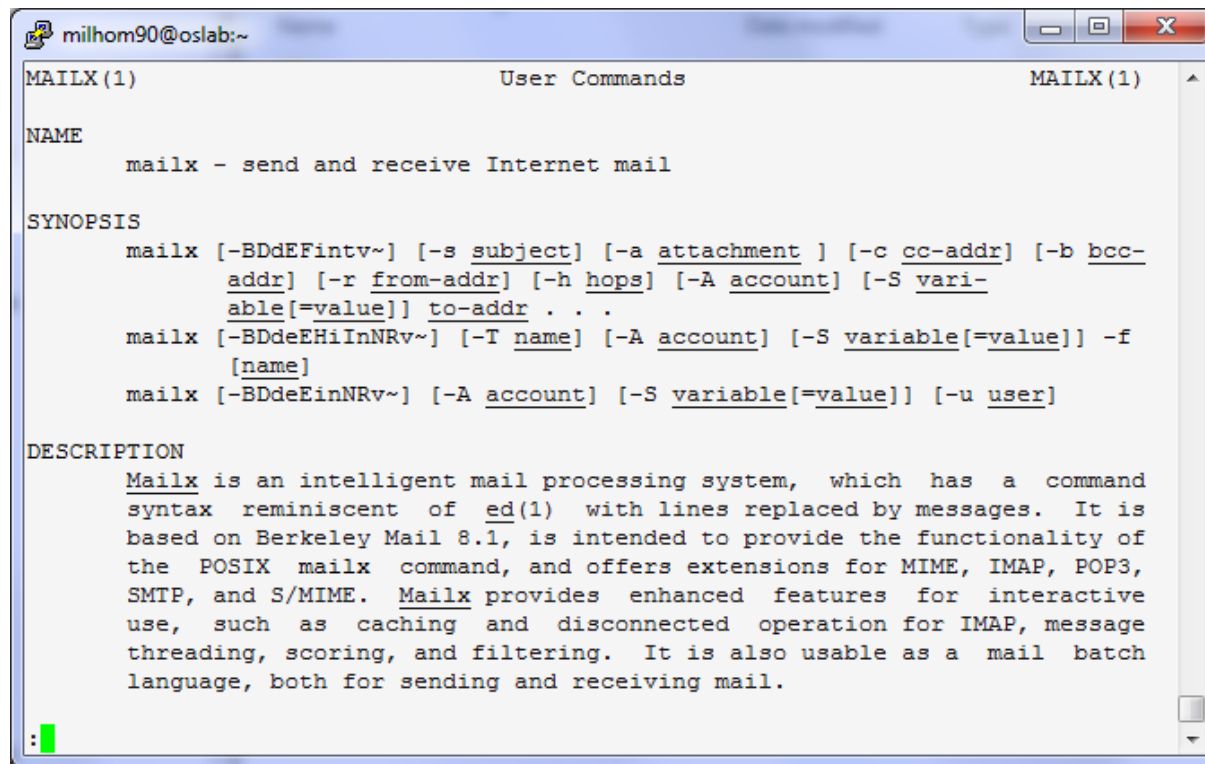




Mail Documentation

man page for mail

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



```

MAILX(1)                                User Commands                                MAILX(1)

NAME
    mailx - send and receive Internet mail

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

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

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

Mail ? command

& ?

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

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

&

Use the ? command to see a short list of common mail commands

Listing messages (headers)

mail h (headers) command

e.g. list my current folder)

```
rsimms@oslab:~/cis90/misc/uhist
& h
> 1 Rich Simms      Fri Feb 19 10:50  17/659  "Test"
   2 Rich Simms      Wed Apr 28 15:52  24/721  "another get well mess"
   3 Jim Griffin     Sat May  1 14:11  28/1131  "Re: Get well soon"
   4 Christopher Botos Wed Sep  1 21:44 152/10825 "Re: Cabrillo CIS 90 u"
   5 Jason Hamil     Wed Sep  1 21:48 191/9909  "RE: Cabrillo CIS 90 u"
   6 Laura Pirkle    Wed Sep  1 22:46 217/9590  "Re: Cabrillo CIS 90 u"
   7 Adriana Plastina Wed Sep  1 22:58 1028/77247 "picture of my face f"
   8 Saulius Zilis   Wed Sep  1 23:12  34/2112  "Re: Cabrillo CIS 90 u"
   9 dennis anti     Thu Sep  2 00:22 178/9983  "Re: Cabrillo CIS 90 u"
  10 francisco cardenas Thu Sep  2 15:15 3166/192496
  11 Jennifer Parrish Tue Sep  7 22:59 3288/201881 "Re: Cabrillo CIS 90"
  12 Rudy Perez      Wed Sep  8 13:15  46/2182  "ccconfer class listin"
  13 francisco cardenas Wed Sep  8 13:15  47/2356  "quiz"
  14 James Garibay    Wed Sep  8 13:32 3153/191560
  15 Jim Griffin     Tue Aug 17 20:20  22/1016  "Opus mail"
  16 Rudy Perez      Thu Sep  2 17:17 2529/192676 "student survey"
  17 Rich Simms      Tue Sep 14 20:26  88/7804  "Re: Saulius"
  18 Mike Delfin     Wed Sep 15 15:06  15/634  "Re: Welcome"
  19 Mike Delfin     Wed Sep 15 15:08  17/636  "Re: Welcome"
& █
```

Use the **h** command to show messages the current folder
Use **z** and **z-** to scroll through headers

mail h (headers) command

e.g. list my current folder)

N = New message, a U = Unread message, an A = answered with reply

```
simben90@oslab:~
& h
N 1 Homer Miller      Tue Sep 11 21:25  20/790  "Hola"
N 2 Rich Simms        Tue Sep 11 21:58  20/752  "Treasure"
> 3 Rich Simms        Tue Sep 11 22:01  20/788  "Lab Hours on Monday"
N 4 Rich Simms        Tue Sep 11 22:01  20/796  "Where were you last summer?"
&
```

message numbers

& is mail prompt for next command

> points to the current message (last one printed)

Deleting Messages

mail commands

(d)elelete and (u)ndelete

```
rsimms@opus:~
[rsimms@opus ~]$ mail -f mbox
Mail version 8.1 6/6/93.  Type ? for help.
"mbox": 4 messages
>  1 simmsmar@opus.cabrill  Thu Jul 24 12:28  19/739  "Don't forget to bring"
  2 simmsben@opus.cabrill  Thu Jul 24 12:27  17/708  "Nisene Hike"
  3 rsimms@opus.cabrillo   Thu Jul 24 12:33  21/819  "Re: Hot days and serv"
  4 roddyduk@opus.cabrill  Thu Jul 24 15:41  19/702  "Salsa"
& d 4
& h
  1 simmsmar@opus.cabrill  Thu Jul 24 12:28  19/739  "Don't forget to bring"
  2 simmsben@opus.cabrill  Thu Jul 24 12:27  17/708  "Nisene Hike"
>  3 rsimms@opus.cabrillo   Thu Jul 24 12:33  21/819  "Re: Hot days and serv"
& u 4
& h
  1 simmsmar@opus.cabrill  Thu Jul 24 12:28  19/739  "Don't forget to bring"
  2 simmsben@opus.cabrill  Thu Jul 24 12:27  17/708  "Nisene Hike"
  3 rsimms@opus.cabrillo   Thu Jul 24 12:33  21/819  "Re: Hot days and serv"
>  4 roddyduk@opus.cabrill  Thu Jul 24 15:41  19/702  "Salsa"
&
```

*Messages can be deleted (and undeleted) with **d** and **u** commands*

Mailbox files (folders)

UNIX mail

The dead.letter mail file

```
/home/cis90/simben $ mail bogus
Subject: Dead stuff
I doubt you will get this because you don't exist!
.
EOT
You have mail in /var/spool/mail/simben90
/home/cis90/simben $ /home/cis90/simben/dead.letter... Saved message in
/home/cis90/simben/dead.letter

/home/cis90/simben $ mail -f dead.letter
Heirloom Mail version 12.4 7/29/08.  Type ? for help.
"dead.letter": 1 message
> 1 To bogus          Tue Sep 17 10:04  18/562  "Dead s"
& d 1
& q
"dead.letter" complete
/home/cis90/simben $
```

Undeliverable mail is placed in your dead.letter file. You can cat this file or open it with the mail command.

Note: On Centos 7.4 the dead.letter file is no longer used. Undelivered messages are now placed in the user's in tray.

UNIX mail

The mail folders are ascii text files

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

```
archives      empty          Lab2.1  Miscellaneous  proposal2    text.err
bigfile       Hidden         letter  mission        proposal3    text.fxd
bin           lab01.graded  log     Poems          small_town   timecal
dead.letter   Lab2.0         mbox    proposal1      spellk       what_am_i
```

```
/home/cis90/simben $ ls /var/mail/simben90
```

```
/var/mail/simben90
```

1 & 4: User's can create there own mail folder files, giving them any name they like, such as archives and mbox

```
/home/cis90/simben $ file archives dead.letter mbox /var/spool/mail/simben90
```

```
1) archives:          ASCII mail text
2) dead.letter:       ASCII mail text
3) mbox:              ASCII mail text
4) /var/spool/mail/simben90: ASCII mail text
```

*Mail files are text files that you can **cat** or open with **mail -f***

2) All undeliverable messages go into a user's dead.letter file

3) All incoming new messages are initially placed in the /var/mail/<username> file

UNIX mail

The mail folders are ascii text files

Mail files are ASCII text files. You can cat them out or open them with the mail command.

```
/home/cis90/simben $ cat archives
```

```
From milhom90@oslab.cishawks.net Mon Sep 16 18:52:53 2013
Return-Path: <milhom90@oslab.cishawks.net>
Received: from oslab.cishawks.net (localhost [127.0.0.1])
    by oslab.cabrillo.edu (8.14.4/8.14.4) with ESMTP id r8H1q rmw008499
    for <simben90@oslab.cishawks.net>; Mon, 16 Sep 2013 18:52:53 -0700
Received: (from milhom90@localhost)
    by oslab.cishawks.net (8.14.4/8.14.4/Submit) id
    for simben90; Mon, 16 Sep 2013 18:52:53 -0700
From: Homer Miller <milhom90@oslab.cishawks.net>
Message-Id: <201309170152.r8H1qrJZ008497@oslab.cishawks
Date: Mon, 16 Sep 2013 18:52:53 -0700
To: simben90@oslab.cishawks.net
Subject: Fwd: Hot Potato
User-Agent: Heirloom mailx 12.4 7/29/08
MIME-Version: 1.0
Content-Type: text/plain; charset=us-ascii
Content-Transfer-Encoding: 7bit
Status: O
```

```
----- Original Message -----
From: Rich Simms <rsimms@oslab.cishawks.net>
Date: Sun, 15 Sep 2013 15:41:49 -0700
To: milhom90@oslab.cishawks.net
Subject: Hot Potato
```

You got it ... forward it on! - Rich

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

```
/home/cis90/simben $ mail -f archives
```

```
Heirloom Mail version 12.4 7/29/08. Type ? for help.
"archives": 1 message 1 unread
>U 1 Homer Miller Mon Sep 16 18:52 28/1002 "Fwd: H"
& 1
Message 1:
From milhom90@oslab.cishawks.net Mon Sep 16 18:52:53 2013
Return-Path: <milhom90@oslab.cishawks.net>
From: Homer Miller <milhom90@oslab.cishawks.net>
Date: Mon, 16 Sep 2013 18:52:53 -0700
To: simben90@oslab.cishawks.net
Subject: Fwd: Hot Potato
User-Agent: Heirloom mailx 12.4 7/29/08
Content-Type: text/plain; charset=us-ascii
Status: RO
```

```
----- Original Message -----
From: Rich Simms <rsimms@oslab.cishawks.net>
Date: Sun, 15 Sep 2013 15:41:49 -0700
To: milhom90@oslab.cishawks.net
Subject: Hot Potato
```

You got it ... forward it on! - Rich

```
& q
"archives" complete
/home/cis90/simben $
```


Class Exercise

UNIX mail

- Send yourself several test messages with different subjects:

mail \$LOGNAME

mail \$LOGNAME

- Now read your mail

mail

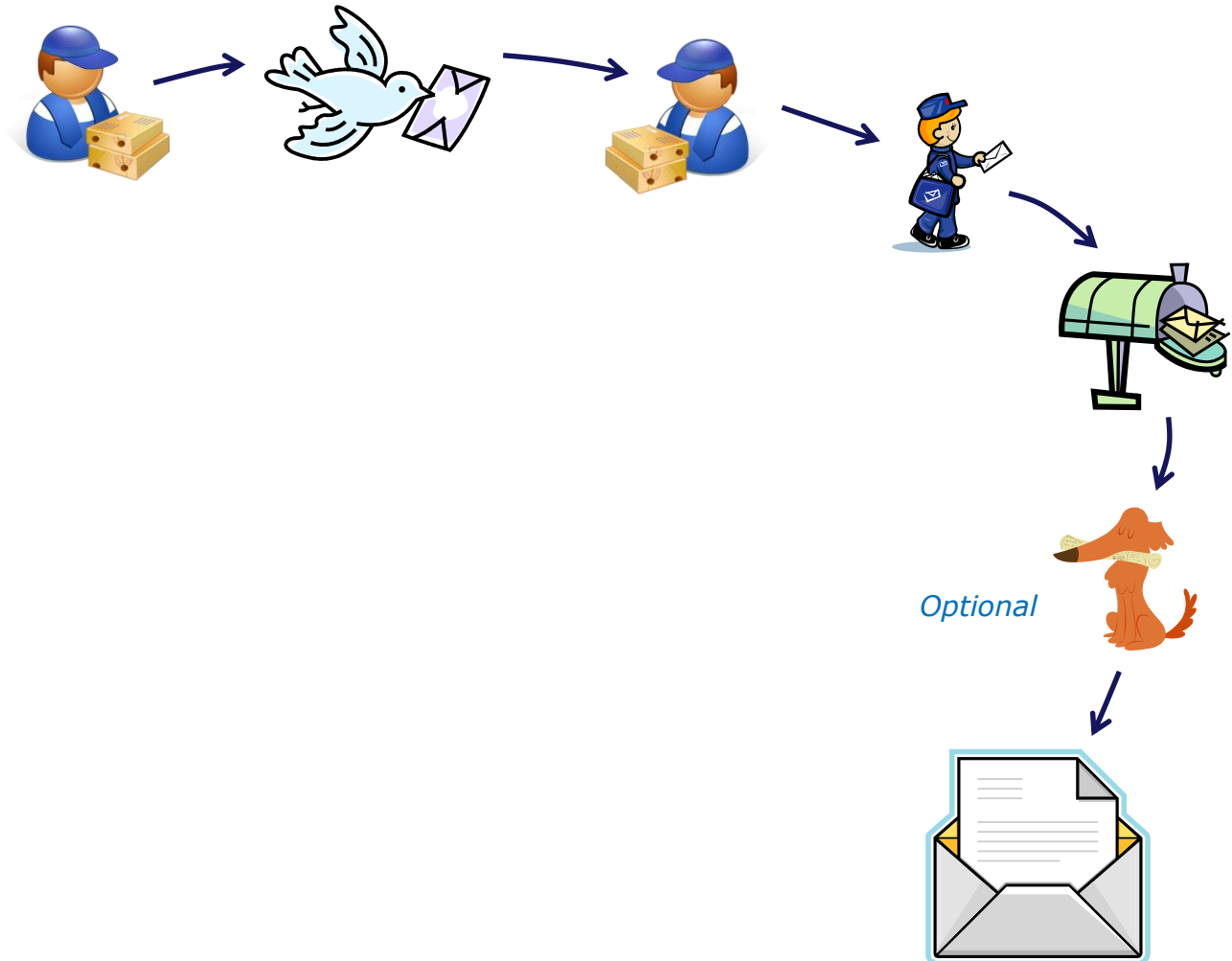
- Use the **h** command to list the message headers
- Read all your messages by entering each message number
- Use the **d** command to delete one of the messages
- Use the **s** command to save one message to a folder named archives
- Use **q** to quit mail
- Read the mail in your archives with **mail -f archives**
- Use **q** to quit mail

end-to-end
email
(if time)



end-to-end email

FYI
only

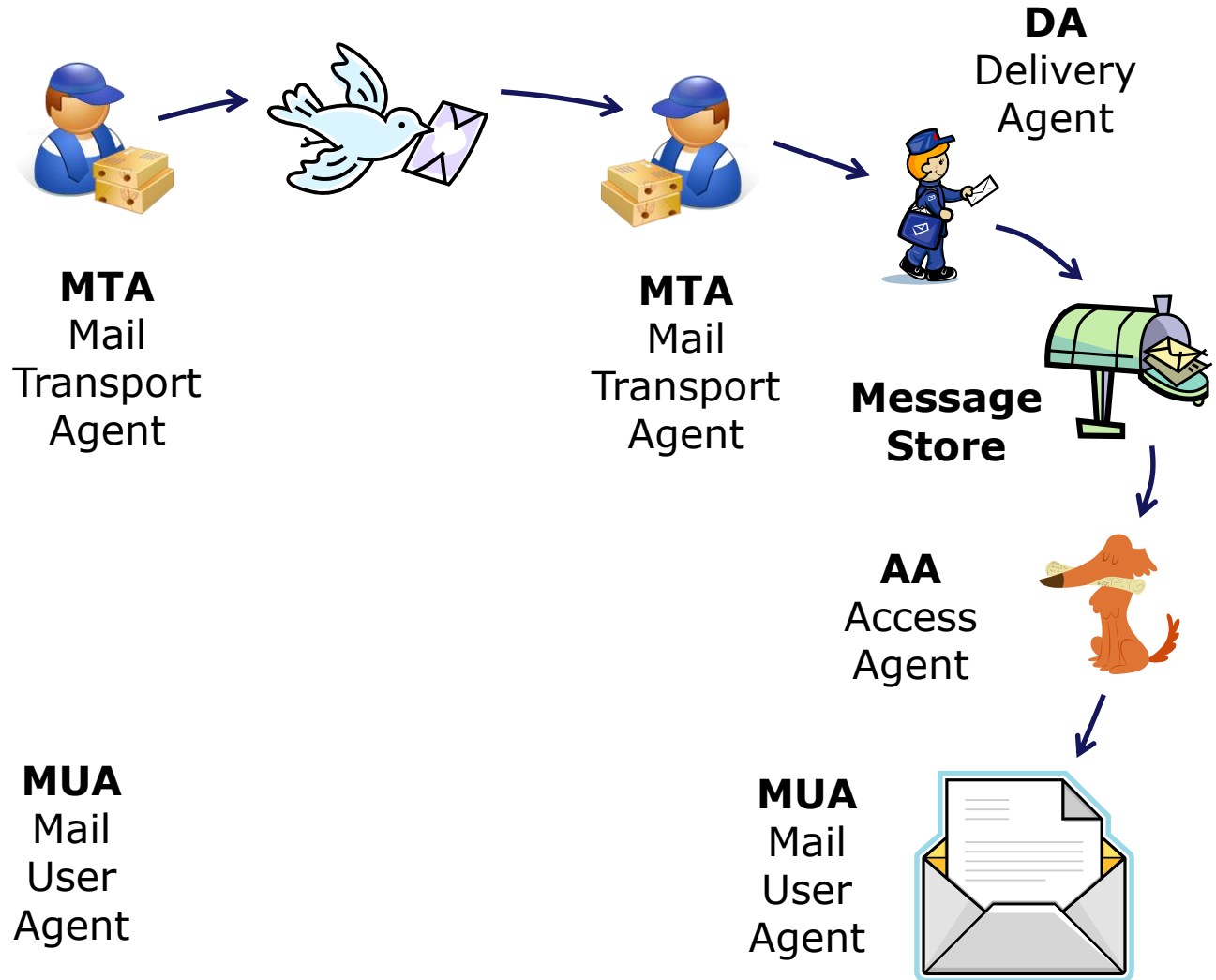


compose and send message

open and read message



end-to-end email

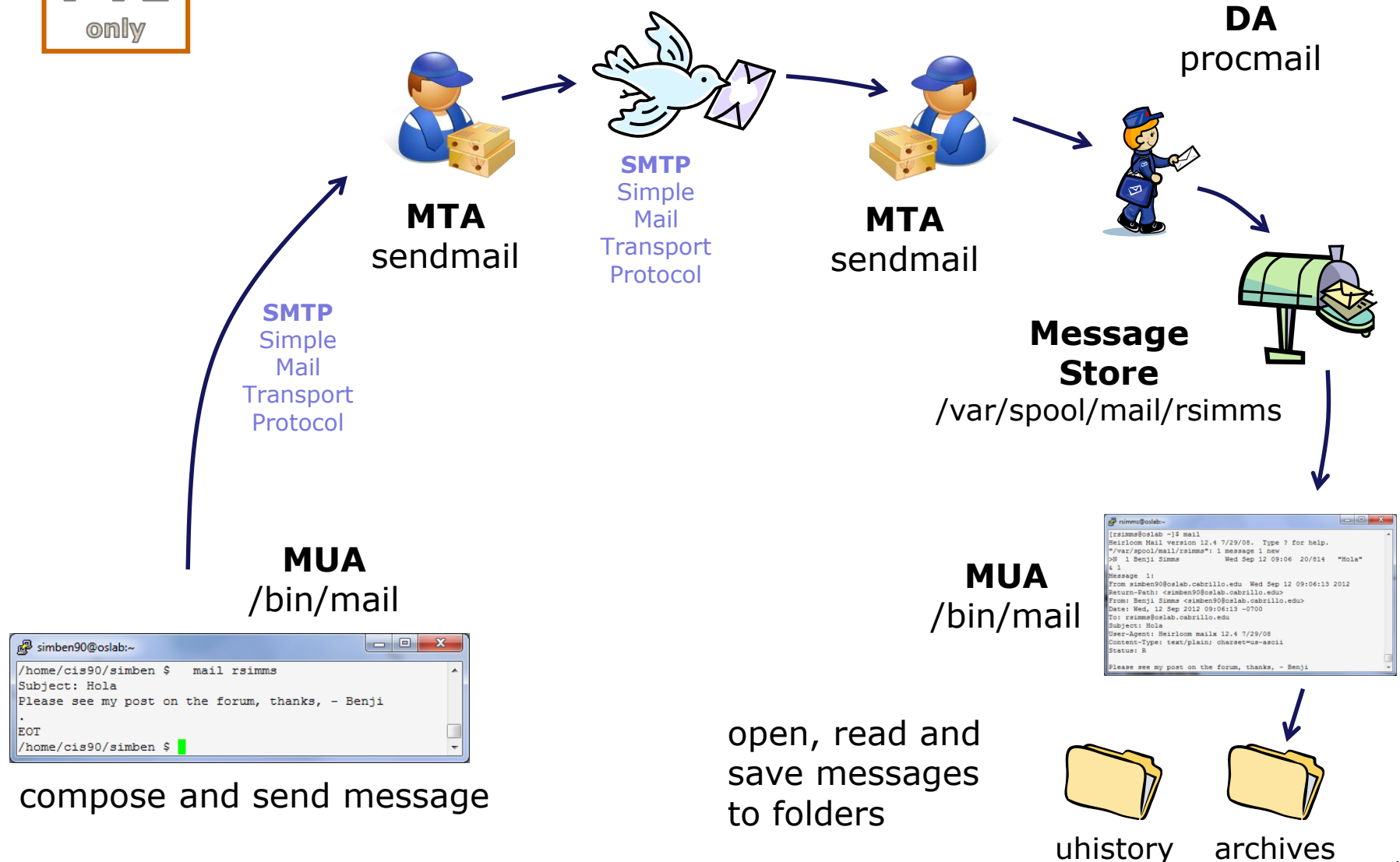


compose and send message

open and read message 182

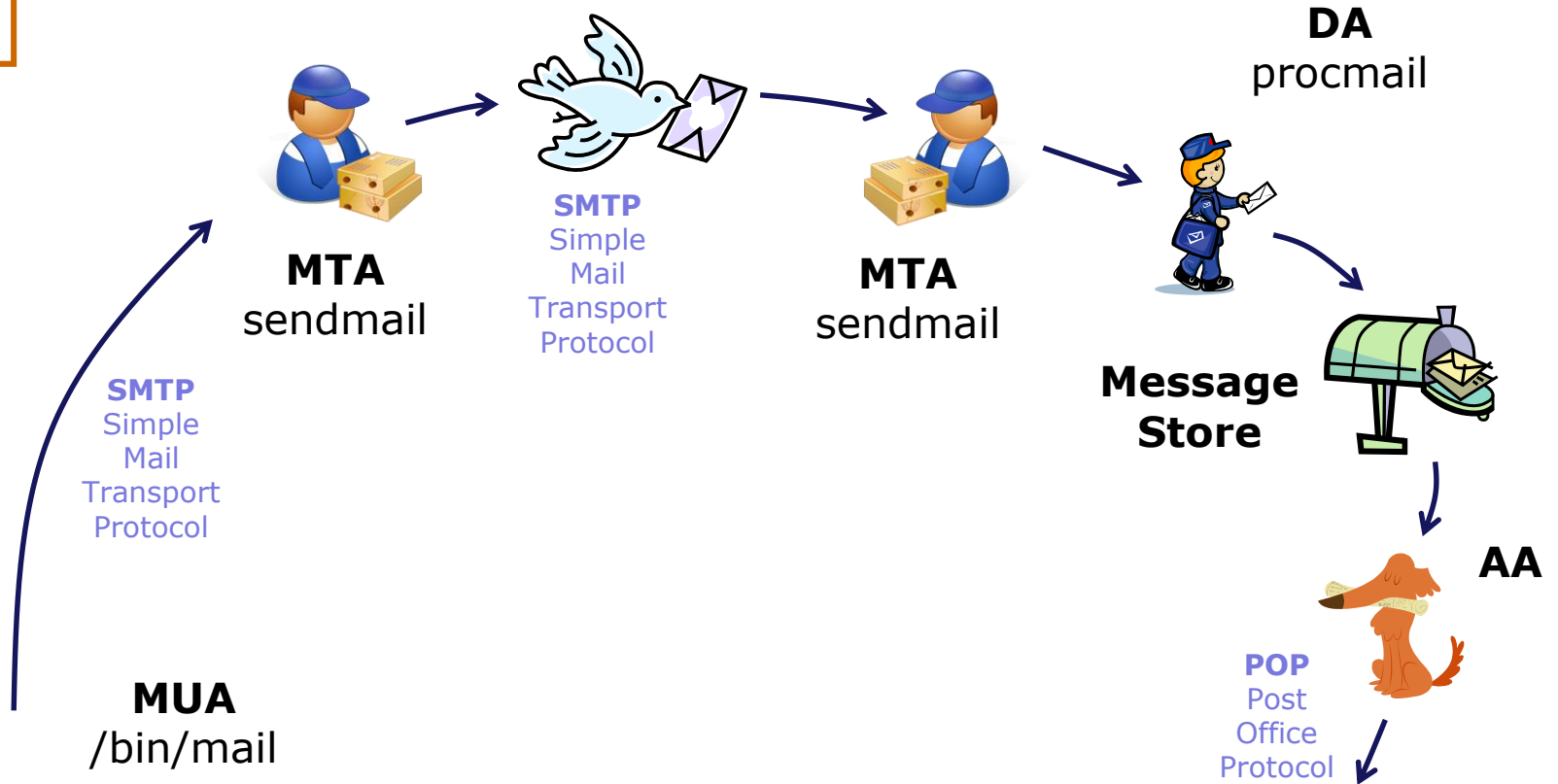
FYI
only

end-to-end email: example Implementation





end-to-end email: example Implementation



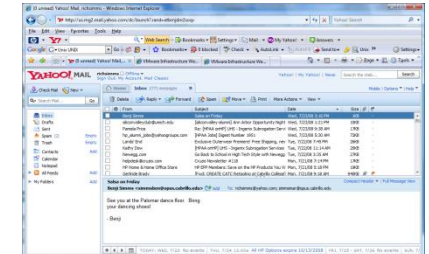
```

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

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

compose and send message

MUA
Yahoo Mail



open and read message 184

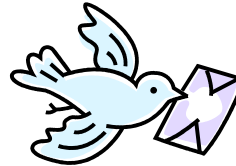
end-to-end email: configuring your MUA (Mail User Agent)



SMTP
Simple
Mail
Transport
Protocol



MTA
Mail
Transport
Agent



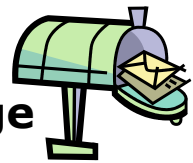
SMTP
Simple
Mail
Transport
Protocol



MTA
Mail
Transport
Agent



DA
Delivery
Agent



**Message
Store**



AA
Access
Agent

POP
Post
Office
Protocol

Example MUA: Windows Mail

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

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

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

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

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



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

Other MUAs MTAs, DAs, AAs



end-to-end email

some of the many players



MTA



sendmail, Exim, Microsoft Exchange, Postfix

DA



/bin/mail, procmail, smrsh

AA



imapd, spop

MUA



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

Assignment



Lab 3

Unix history
via command-line email

Notes to Rich



[] - Send out UNIX historical events for Lab 3

use **events** alias or

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



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

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

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

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

Rules:

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

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

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

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

Tips for Lab 3

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

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

Post and read more tips on the forum

A full-page background image showing a sunset over a beach. The sky is filled with vibrant orange, pink, and purple clouds. The sun is low on the horizon, casting a warm glow. To the right, a dark, silhouetted cliff rises from the beach. The foreground shows the wet sand of the beach reflecting the colors of the sky, with some dark rocks scattered about.

Wrap up

New commands:

mail

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

mesg

write

irssi

- UNIX mail

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

- Enable or disable writes to your terminal
- Write message to another user
- IRC chat client

New Files and Directories:

/var/mail

/var/mail/*username*

mbox

- Message store for mail
- Incoming mailbox for *username*
- File in users home directory where read messages are archived to

Next Class

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

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

Quiz questions for next class:

- What command can you use to "chat" with another user?
- How do you forward a message with /bin/mail?
- What is the dead.letter folder?

End Meeting

End Meeting

Backup



Practice Questions Lessons 1 & 2

Practice Test Questions

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

Practice Test Questions

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

Benji's uid is 1201

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

Practice Test Questions

What day of the week was Sept 11, 2001?

Practice Test Questions

What day of the week was Sept 11, 2001?

It was a Tuesday

```
/home/cis90/simben $ cal 9 2001
    September 2001
Su Mo Tu We Th Fr Sa
                1
 2  3  4  5  6  7  8
 9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28 29
30
/home/cis90/simben $
```

Practice Test Questions

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

Practice Test Questions

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

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

It's in the /usr//bin directory



Practice Test Questions

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

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


Practice Test Questions

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

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

Command: ls

One option: -l (for long listing)

One argument: /boot/grub

Practice Test Questions

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

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

Practice Test Questions

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

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

Command: echo

No options

4 arguments:

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

Practice Test Questions

Which program gave you this error message?

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

Practice Test Questions

Which program gave you this error message?

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

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

Practice Test Questions

Which program gave you this error message?

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

Practice Test Questions

Which program gave you this error message?

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

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

Practice Test Questions

What terminal device are you using?

Practice Test Questions

What terminal device are you using?

Use the tty command to find out:

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

Practice Test Questions

What type of terminal are you using?

Practice Test Questions

What type of terminal are you using?

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

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

This user's terminal type is xterm

Practice Test Questions

What directories make up your path?

Practice Test Questions

What directories make up your path?

Use echo \$PATH to find out:

```
/home/cis90/simben $ echo $PATH
```

```
/usr/local/bin:/usr/bin:/usr/local/sbin:/usr/sbin:
```

```
/home/cis90/simben/../bin:/home/cis90/simben/bin:.
```

/usr/local/bin

/usr/bin

/usr/local/sbin

/usr/sbin

/home/cis90/simben/../bin

/home/cis90/simben/bin

.

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

Practice Test Questions

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

Practice Test Questions

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

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

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

Practice Test Questions

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

Practice Test Questions

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

It's PS1

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

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

Both PS1 and PS2 are environment variables

Practice Test Questions

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

Practice Test Questions

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

Set PS1 to new value using "=" sign

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

Practice Test Questions

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

Practice Test Questions

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

To restore the original prompt use:

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

More Review (variables)

Environment Variables

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

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

```
$ echo $LOGNAME
simmsben
```

```
$ echo HOME
HOME
```

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

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

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



Make your own shell variables

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



```
$ echo $FAN
```

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

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

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

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

Now set the FAN variable to "LO"

Activity

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

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

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

Write your answers in the chat window