

CSCI 414/553: Networking III

Unix Network Programming

Spring 2008



Introduction



Textbooks

[SWC] *Software Carpentry* by Greg Wilson

Web Course: <http://www.swc.scipy.org>

[UPU] *UNIX for Programmers and Users, 3/E*

by Graham Glass and King Ables

Prentice Hall, 2003, ISBN: 0-13-046553-4

[AUP] *The Art of Unix Programming*

by Eric S. Raymond

Addison Wesley Professional, 2003, ISBN: 0-13-142901-9

Free CC license version: <http://www.faqs.org/docs/artu>

[UNP] *UNIX Network Programming, Vol. 1: The Sockets Networking API, 3/E*

by Richard Stevens, Bill Fenner, and Andrew M. Rudoff

Addison-Wesley Professional, 2003, ISBN: 0-13-141155-1

[PYT] *Python Tutorial* by Guido van Rossum

Web: <http://docs.python.org/tut/tut.html>



Evaluation

Your grade for the course will be based on the following (approximate) percentages:

Two Tests	40%
Labs / assignments (8)	40%
Course Project	20%

Wk	Date	Topic / Activity	Reading	Lab
1	Jan 15/17	Intro, Syllabus, Linux Accounts	AUP 1,2,3	
		Shell Basics (SWC), More Shell (SWC)	UPU 1,2,3,4,5,8	
2	Jan 22/24	Version Control (SWC)	UPU 12 (SCCS)	1: Unix Shell, Shell Scripts
		Debugging (SWC) Unit Testing (SWC)	UPU 12 (debugger)	
3	Jan 29/31	Compilers, Linking, Libraries	UPU 12 (C compiler, ld), AUP 14	2: Subversion,
		Automated Builds (SWC)	UPU 3, 12 (make), 13, AUP 15	
4	Feb 5/7	Basic Scripting (SWC), Strings, Lists and Files (SWC)	PYT 1,2,3	3: Linkers & Compilers, Make
		Sets, Dictionaries and Complexity(SWC), Functions and Libraries (SWC)	PYT 4, 5, 10, 11	
5	Feb 12/14	Regular Expressions (SWC), Object-Oriented Programming (SWC),	PYT 6, 9, 10.5	4: Python Scripting
		Style (SWC), Quality Assurance (SWC)	PYT 8	
6	Feb 19/21	Binary Data (SWC), XML (SWC), Relational Databases (SWC)		5: Testing, Data, RegExp
		Unix Administration	UPU 9	
7	Feb 26/28	Test 1		
8	Mar 4/6	Introduction to Networking and TCP/IP Network Protocols	UPU 9, 10, UNP 1,2, AUP 4,5	
9	Mar 11/13	Web Client Programming (SWC)		6: Client / Server
		Web Server Programming (SWC)		
	Mar 17-23	Spring Break		
10	Mar 25/27	Building TCP Client/Servers with Sockets	UNP 3,4,5	
		Connectionless sockets / UDP	UNP 7,8	
11	Apr 1/3	I/O Multiplexing: signals and polling	UNP 7, UPU 13 (signals)	7: Sockets
		Basic Inter-Process Communication (IPC) in UNIX	AUP 7	
12	Apr 8/10	Fifos, Pipes, Shared Memory, Mutexes and Semaphores	UPU 13	
13	Apr 15/17	Distributed and Parallel Computing		8: Distributed Computing
14	Apr 22/24	Test 2		
15	Apr 29/1	Course Project, Presentations and Demos		
	May 5-9	Course Project, Presentations and Demos		



Lab Rules

- Accounts will only be available Spring 2008 semester (will be deleted at end of class)
- You may not take any books (or other materials) from the lab.
- We will try and get some supervised lab hours so you may use these machines during the week.
- Please if you have your own laptop, bring it to class so we will have more resources.
- Research work takes precedence.
- Only 553 students are allowed in the lab.
- You must only use your account, you may not share you account or allow someone else to use it.



Project Rules

- You must do your project development on the nisl lab machines (using the class repository I will create).
- You must do your own project.
- I will give some example projects next week.
 - Simple mail client to access a POP3 mail server
 - Simple web browser
 - IRC chat program
 - Web / soap client to access Amazon database
 - Web / soap client to access google maps



Linux Accounts

- I will create accounts for all students, you need to sign account request forms and return.
- Indicate the username you wish to use for the class.
 - username: best to use first name, or first initial with last name. Try and keep username to 6-8 characters.
 - password is initially set to same as username
- Your first assignment: By next class you must get ssh access to your account and change your password from the shell using the passwd command.



SSH Access

- see handouts
- demo from windows machine
- Virtual Ubuntu machine access from CS computing labs?