CS 35L- Software Construction Laboratory

Winter 19

TA: Guangyu Zhou

Lab 3: M/W: 2-4pm

BOELTER 3760

What's this class about?

"Fundamentals of commonly used **software tools** and **environments**, particularly **open-source** tools to be used in upper division computer science courses."

- Not a theory class;
  - More about facts and application
- Not a programming language class (CS31);
  - Training you with essential skills and hands on experience to solve problem
- No professor or lecture;
  - Learning and apply in Lab sessions
- No textbook has been selected;
  - Very diverse topics and online material will be referred to extensively.

Course Overview

- Lab schedule
  - First half: lecture given by me (or presenters);
  - Second half: time to work on your assignment
- Part I: Basic tools and languages
  - Week 1 – Introduction to Linux
  - Week 2 – Shell Scripting and Regular Expression
  - Week 3 – Modify and Rewrite Software (makefile, Python)
  - Week 7 – Secure Shell
  - Week 9 – Change Management (Git)
- Part II: C programming, basic concepts for Operating System
  - Week 4 – C programming and Debugging
  - Week 5 – System Call
  - Week 6 – Multiple Thread Programming
  - Week 8 – Dynamic Linking

Course Information

- TA Contact information
  - Email: guangyuzhou@g.ucla.edu
  - **Office hour:** TBD
  - Course website: http://web.cs.ucla.edu/classes/winter19/cs35L/
- CCLE: my lecture slides and supplement materials, update **after class**
  - **Each TA will have their own slides & exam**
- Prerequisite: CS 31
- Join Piazza(https://piazza.com): for class discussions
  - Search for CS35L, Winter 2019
  - **Use Piazza to discuss about assignments or course related questions!**

Grading

- Grading
  - Assignments – 50% (equally weighted)
  - Final Exam – 50% (open book, open notes)
- Assignments: 10 in total
  - 2 parts: Lab and Homework: due on CCLE every Saturday 11:55pm (except last two)
  - All assignments should be done individually!!!
- Policy for late submission
  - 2^N % of the assignments value for being N days late
  - **Assignment 9 and 10** should be submitted on time
    - No submission will be accepted after the last day of instruction

Course Information

- Attendance
  - No mandatory except the presentation, but highly encouraged
  - You are not required to finish the lab here in class
  - You can do everything using your computer by access to Seasnet server remotely.
- PTE policy
  - Write down:
    - Your name, uid, email, department and year.
  - Attend each class
  - PTE might be given in the second week depending on class volume
- Switch of lab session:
  - Please proceed to contact the TA in other session for enrollment. Each session has it's own exam. You are welcomed to auditing.

Presentation

- Presentation
  - Topic on recent research in computer science
    - **Technical** content is required
  - Please think about topics from now on!
  - 10-12 minutes talk in class
  - 1 or 2 people
  - Participation in Q&A
  - Sign-up sheet in week 3-4. (FCFS!)
  - Brief Research report (due in the last week)

http://web.cs.ucla.edu/classes/winter19/cs35L/assign/assign10.html

Useful pointers

- News sources
  - *ACM TechNews*, for example:
    - 2018-09-09
    - 2018-09-21
    - 2018-09-24
  - *;login:* The USENIX Magazine
  - *Computing Research News*
  - *Linux Today*
- Index for research in computer science
  - Google Scholar
- Computing research and study organizations
  - Association for Computing Machinery and the UCLA ACM Student Chapter
  - IEEE Computer Society and the UCLA IEEE student chapter
  - Linux Users Group at UCLA
  - USENIX
  - Computing Research Association
  - SCaLE
- Academic study and research
  - CRA for students
  - Joel Spolsky, Advice for computer science college students (2005)
  - Phil Agre, Advice for undergraduates considering graduate school (2001)
  - Mor Harchol-Balter, Applying to Ph.D. Programs in Computer Science (2014)
  - UC Berkeley Computer Science Division
  - Carnegie Mellon School of Computer Science
  - MIT Department of Electrical Engineering & Computer Science
  - Stanford Computer Science Department
- Industrial research and development
  - Bell Labs
  - Cisco Research Center
  - Facebook Research
  - Research at Google
  - HP Labs
  - IBM Computer Science Research

Past presentation topics

- AI OpenScale-pros, cons, future
- Turn 2-D video to 3-D motion sculpture
- Audio to Visual instruments
- Using photonics for quantum computing
- Security flaws in Wifi routers
- Self-driving cars. Tech and Legality
- …
- Try to be creative!

Additional Information

- For some of the later labs you will need a Seeed Studio BeagleBone Green Wireless Development Board. You may wish to get the higher-priced Seeed Studio BeagleBone Green Wireless IOT Kit, as this is a superset of the basic unit needed for 35L, and is used by CS 111 this quarter (and likely in later quarters, though this is not guaranteed).
- These units are available from Seeed, Amazon, Digi-Key, Mouser Electronics, Verical, and other sources.

- Please try to get it as early as possible once you decided to take the course. It may run out of stock.

Seasnet

Secure Remote Login File Transfer

For secure remote login and
file transfer, use ssh and sftp (instead of telnet and ftp).

To run graphical
application on a remote unix server, see X11 Forwarding.

Windows Clients

- PuTTY SSH
  - How to install
  - How to use
- WinSCP freeware SFTP and SCP client for Windows
- X11 Forwarding
- Xming X Server for Windows

Unix Clients

- Example: how to use ssh
- Example: how to use sftp

Macintosh Clients

- Note that Mac OS X includes OpenSSH by default.
- OpenSSH Mac OS clients

www.seasnet.ucla.edu/secure-remote-login-file-transfer/

Seasnet important notice

- Get a Seasnet account ASAP!
- Login and do your Homework on the following server
  - ssh [username]@lnxsrv06.seas.ucla.edu
  - ssh [username]@lnxsrv07.seas.ucla.edu
  - ssh [username]@lnxsrv09.seas.ucla.edu
  - ssh [username]@lnxsrv10.seas.ucla.edu

- We are going to test your assignment solutions on these servers
- You are fine if you can’t get the Seasnet account for week 1 due to enrollment issue
  - Try to use any other Linux (virtual box, cygwin, ios terminal etc)

Seasnet login option

- Remote login via CLI
  - Command: ssh username@lnxsrv.seas.ucla.edu
  - Copy to/from Seasnet server: scp
    - Windows users: Putty
    - Mac users: Terminal (might need to install mac-ports)
    - Linux users: Terminal
- with /usr/local/cs/bin prepended to your PATH
  - PATH=/usr/local/cs/bin:$PATH
  - echo $PATH

Any questions about the course?

If you email me, please have **CS35L** in your title.