CSCI 2461, Computer Networking 3 - Linux

Curriculum Week 7

MATTHEW J. HARMON

Wednesday, February 21, 2018

CSCI 2461 Curriculum for Spring 2018

Contents

Computer Networking 3 - Linux

Instructor

- Matthew J. Harmon < matthew.harmon@saintpaul.edu >
- Office Hours: Before class on Wednesday, or by appointment
- Submit all class questions to the D2L discussion forum for that week
- Emergencies or private matters, email or see me in person.

Class Time and Location

- CSCI 2461 70 (000684) 4 hour block 01/10 - 05/09 W 6:00pm - 9:55pm Main Campus 3290
- CSCI 2461 71 (001168) Blended/Hybrid 01/10 - 05/09 W 4:00pm - 5:55pm Blended/Hybrid, Main Campus 3290

Prerequisites

Saint Paul College admission.

Textbook

- How Linux Works, 2nd Edition by Brian Ward
  - ISBN-13: 978-1-59327-567-9 November 2014)
  - Get 35% off including an eBook by using the code "35HARMON"
- Required Readings
- Modules (Weekly Release)

Hardware and Software Requirements

- A computer with at least 40 GB of hard disk space free and 4 GB of RAM
- A modern web browser (such as Firefox, Google Chrome, Chromium) with features such as NoScript and AdBlock disabled
- A virtualization platform such as VirtualBox or VMware
- Virtual machines created for this class.
- A high speed USB storage drive only for use in this class.

Required Readings

Each week there will be required readings to be completed before each class. This is in addition to the class labs.

Assessment

- ~~Labs Submit on D2L~~
- Weekly Labs Submitted GitHub Repo and Upload repo .zip to D2L
- Final Project
- Midterm
- Quzzes
- Readings, attendance, participation, D2L discussions, peer support.

Syllabus

Class Learning Objectives

1. Automate tasks by creating bash scripts.
2. Control, monitor, and schedule processes.
3. Create shell scripts in other program languages.
4. Explain and configure network file systems.
5. Explain navigation, file attributes, mounting, and backups.

6. Explain the essential duties of a Linux system administrator.
7. Explain the role of Linux in computer virtualization.
8. Explain the Linux access control model and root privileges.
9. Identify Linux security issues and techniques.
10. Install software and manage packages.
11. Manage users, groups, and permissions.
12. Perform common shell operations using commands, filters, & pipes.
13. Setup and configure a database management system
14. Setup and configure web hosting using Apache.
15. Setup, manage, and troubleshoot TCP/IP networking.
16. Utilize common Linux tools

Class Mapping

This class has been cross mapped to the CompTIA Linux+ by the Linux Professional Institute's Certification.

Lesson Plan

Week	Date	Agenda	Homework
01	Jan 10	Intro, Semester Overview, Workstation Preparation	HowLinuxWorks Read Ch 1, Review Chapter 2. Install and configure VMware and install Ubuntu Linux, sign up for a github.com account and send your Instructor your username, complete github training
02	Jan 17	Linux Command Line and Shell Scripting, How CPU Cache Works	Read HowLinuxWorks Ch 2, write first scripts and submit for peer review on D2L
03	Jan 24	Shell Scripting & Devices	1. Write an executable shell script applying How Linux Works Chapter 3 material, submit to Discussion on D2L. 2. Review a peers script in D2L Discussions, and submit both yours and theirs to Assignments in plain text before next Tuesday. Readings: Read the Linux Filesystem Hierarchy Standard, Review the Linux Standard Base, Read "How Linux Works" Chapter 3 and write a script to apply the material, Read and review peer scripts in D2L Discussions

Week	Date	Agenda	Homework
04	Jan 31	Disks, Filesystems, & GitHub	Read “How Linux Works” Chapter 4 “Disks & Filesystems”, make applicable scripts for all commands, Review “How Linux Works” Chapter 5 “Linux Kernel Booting”, Read, review, and run peer scripts from GitHub“, Setup a bootable Debian based image on your USB drive with *persistence*, Setup git on your bootable Debian drive, git clone and comment on peers scripts
05	Feb 07	Linux Kernel & Booting	How Linux Works Chapter 5 Linux Kernel Booting, Build and Boot your Debian USB. Read Installing Debian from Scratch, read QEMU Bootstrap, read Cross Debootstrap
06	Feb 14	NO CLASS. Linux User Space & QEMU Emulation	Read Chapter 6 “How User Space Starts”, read How to create qemu-bootable image using debootstrap thread, read Debian QEMU Setup, read QEMU Documentation Wiki
07	Feb 21	Linux Kernel & System Init, Networking: Physical/Data Link	Labs, Read & Respond An Industry Guide to Becoming a Software Engineer by Bill Langenberg, Review Chapter 9
08	Feb 28	User Space & System Configuration, Networking: IP & Transport	Review Chapter 10
09	Mar 07	System Init & Configuration, Networking: Services	Midterm
10	Mar 14	Spring Break	Spring Break

Week	Date	Agenda	Homework
11	Mar 21	Pending Release	Pending Release
12	Mar 28	Pending Release	Pending Release
13	Apr 04	Pending Release	Pending Release
14	Apr 11	Pending Release	Pending Release
15	Apr 18	Pending Release	Pending Release
16	Apr 25	Pending Release	Pending Release
17	May 02	Pending Release	Pending Release
18	May 09	Pending Release	Pending Release

Course Policies

Electronic Devices

Unless being used for in-class labs, laptops are not allowed to be used in class. Mobile devices (phones) are not allowed and must be silent.

If you receive an emergency message during class, you may quietly step outside of the classroom to take the call.

Late Policy

Labs and homework must be submitted before the end of the day before class on D2L. One day of grace is provided automatically; submissions after the grace period will not be accepted.

1. Life emergencies happen that may impact your ability to submit your labs on-time. If you have a reasonable reason for extension, you may receive one (1) extension before midterm, and one (1) before the class final pack is assigned.
2. If you have an extraordinary difficulty such as bereavement, family emergency, or other matter. Contact Saint Paul College administration and have them contact me to make special arrangements, before the lab is due.