CST 318 – Introduction to Unix
Syllabus

Instructor: ERIC G. ERKOWITZ

Office hours:
Monday and Wednesday 12:15-1:30 and 4:00 – 6:00 PM  Gage 506A

E-mail:

Students are expected to check their Roosevelt myMail accounts on a daily basis and it will be assumed that students are aware of any messages sent out using this method.

The following instructions are mandatory for sending e-mail. Failure to comply may cause your email message to be lost.

My e-mail address is: eberkowi@roosevelt.edu

When sending a message you must:

• use a relevant subject line.
• put your FULL NAME and Unix username in the body of the e-mail.
• send a complete and concise message.
• if your message is about an error message, send the full text of the message.
• When explaining a problem please not tell me just that “XXXX does not work.” You must explain:
  o What you wanted (expected) it to do that it is not doing.
  o What is actually does whether or not this is what you wanted.
  o Any feedback provided by the computer system including all error messages.
  o Anything else that might help but the items listed above are a minimum.
Computer access:

Students will be given accounts on one or more CST servers, and the CST Network Users Policy. The CST Network Users Policy will be posted with the course documents on the Blackboard site for this course. You are expected to
read it. Use of any CST computers implies your agreement with the terms of the policy.

SSNVC (replaces plink and vnc)

The course utilizes special software that allows students to access the CST Unix server with a full Graphic User Interface, over a broadband Internet connection. This is done using ssvnc as will be demonstrated during week one of the course.

All software required for this course is Open Source and no-cost software.

The beauty of the software we are using is that:

1. The software saves its state. When you disconnect your GUI session the server remembers exactly the way it was. Unless the server crashes or fails in some other way, the way you left the system when you disconnect is exactly the way you will find it when you log back on.

2. You can log on from anywhere with a broadband connection and access to the Internet. Please note that due to rigid security at many places of business you may be unable to connect from work unless you make special arrangements to do so with your IT staff.

3. On-line help from the instructor can be real-time and fully interactive. It is possible for you and me to both log into your GUI session and interact with the same programs at the same time. Thus, if you are having difficulties, it is possible for me to see what is going wrong and to demonstrate the correct approach to fixing it no matter where you are or where I am. As long as we can both access the server at the same time we can interact via a single GUI we both see.

4. It is possible to use GUI based editors, cut and paste, and other features of a modern OS even over a remote link.

The software does take some time to get used to it, and ample time is provided in the schedule as well as detailed online instructions. Once you do get used to the software, I believe you will find it enjoyable to use.

Modern computer vendors and software suppliers have begun to load computers with a plethora of automated security software in the name of preventing malicious activity by programs on the computer. This includes, antivirus software, anti-spyware software, firewalls, network monitors, VPN software etc. The software required for this class has been tested on standard systems running Windows 2000, XP and Vista and has been shown to be stable, reliable, and fairly easy to use. Unfortunately the instructor can usually not provide assistance in the case where security or other software installed on a student’s computer prevents the software for this class from operating properly.
An important note to users of wireless networking:

Wireless is great – Sometimes! It means one can surf the Web and be on a network without being tethered to a wall outlet. It does have a down side. It is not 100% reliable. This is not a problem for surfing the Web where each request for a page is an isolated event. If you connection lapses momentarily between requests for pages you probably don’t even notice it. If it lapses during a request you see your browser hang and you press the reload button to issue a new request.

This behavior is however a problem for remote server connections. The communications between the server and your home computer must be 100% reliable with no lapses. Even the shortest interruption can sever the link and cause the software to close with an error message forcing you to log on over and over again. If this happens you may need to use a regular Ethernet cable connection when using the software for this class.

Course Description:

The course is intended to help familiarize students with the use of modern Unix based operating systems. A more detailed description of the course can be found in the course documents for week 1.

Format:
The class will be a combination of (written) lectures, reading assignments, guided study, and homework/project preparation. Homework and reading will be assigned each week. Students are required to expand upon what they learn in class, to ask questions, and to pursue demonstrate an ability to use the skills they acquire during the course for independent solving of problems. When problems or questions arise during the course students are expected to demonstrate an ability to use the available documentation to find answers. Students are always welcome to send questions or concerns to the instructor but when doing so will be expected to include with the question an explanation of the steps the student took to try to solve the problem independently. The instructor in turn will work with the student to: A) resolve the problem at issue and B) help the student enhance his or her independent problem solving skills. Quizzes may be given periodically to assess a student's assimilation of the course material.
Each student will be submitting several homework assignments during the semester.

Grading:
Homework: 30%, Quizzes: 15%, Midterm: 25%, Final Project/Exam 30%
Letter grades are assigned according to the following mapping:
91-100: A, 81-88: B, 71-78: C; 61-68 D
90: A-, 89: B+, 80:B-, 79: C+, 70: C-, 69: D+, 60: D-

Please note that the final exam may take the form of a formal test or an at-home home assignment/project.

Instructions for Submission of Homework

Homework submission:

Homework must be submitted cleanly, neatly and on-time. I must insist that assignments be submitted by any stated deadline even if the work is incomplete! Partial work will receive partial credit but late work will not be accepted. You may request permission to complete the assignment and resubmit it but you must send what you can on or before the deadline. This may sound harsh, but particularly in an on-line environment where direct contact is limited, continuous feedback is essential to the courses success. Why? Because, if students in the class are unable to complete an assignment the instructor needs to know that. The instructor can not get any information from a lack of submissions except to conclude that the work is not getting done. On the other hand, if several students submit partial assignments the instructor, when seeing this, can learn that he needs to provide additional instruction or support in the areas that proved difficult.

Homework may also take the form of an on-line assessment. If such an assessment exists for the current week’s lesson, please follow any on-line instructions and complete the assessment by the last business day of the appropriate week.

During the semester the form of homework submission will vary. If you are asked to answer questions from the textbook you need to submit homework in the following way. Again, failure to follow instructions can have unfortunate results and prevent you from receiving credit for work you have done, so please review all instructions carefully.

Written assignments can be sent to the instructor as:
1. Virus-checked Microsoft Word document
2. Rich Text Format (RTF)
3. Plain text

Students are responsible for ensuring that any files sent to the instructor are virus free. Infected files will receive a failing grade.

Files sent to the instructor must be less than 1 Megabyte in size. Your file must contain the following information:
1. Your full name
2. The assignment you are doing and the week with which is it associated in the course sequence.
Later in the semester you may be asked to create files on the lambda computer. You must use the filename and directory structure specified in the assignment.

**Attendance:**
Students are required to demonstrate an understanding of all of the material covered during the semester. Regular attendance is expected, and it is the responsibility of students who miss a class to learn the material that was covered and to learn of any announcements or other information given to the students during the missed class. A student who knows in advance that he/she will miss a class must submit any work due prior to the assigned deadline. Missing a class does not imply an extension to a due date. Special arrangements can be made in exceptional circumstances for missed quizzes or other graded work provided that the arrangements are made prior to the absence or when this is genuinely not possible, in a timely manner following the missed class.

**Deadlines and Due Dates:**
Students are responsible for making sure materials are submitted on or before any due dates. Late work is not accepted. Students should submit the completed portion of any assignment by the stated due date. If you cannot be in class the day an assignment is due you must submit your work at an earlier time.

**Academic Honesty:**
Students are required to familiarize themselves with Roosevelt University’s policies regarding academic honesty. Violations will result in an automatic failing grade and formal disciplinary action. Students are expected to apply themselves and their previous experience and knowledge in this class. A student who does this will produce projects and homework that are uniquely his/hers and unlike those of any previous or current students. While students are encouraged to help one another, collaboration on assignments to be submitted for grading is prohibited and will be considered a violation of academic integrity unless the students involved have requested and received prior consent from the instructor.

**Reading Instructions:**
If you have read this far in the syllabus you are doing quite well. Unfortunately, each semester, several students submit work that is of lower quality than that which they are capable of submitting for no other reason than the fact that they did not completely read all of the instructions including any hints and guidelines at the end. No matter how complete, true, and explanatory an answer is, it only gets credit if it actually responds directly and completely to the question that was asked. Please! In all homework, assignments and exams, read all instructions and only then begin to work. After completing your work re-read the instructions to ensure that you have done all that was asked and in the manner specified.
Rewrite the questions and instructions for yourself as a check-sheet and check off each section if you believe this will help.

**Schedule**

**Free lesson:** This lesson can be completed at any point during the course. Those interested in setting up their own Unix computers might like to complete it at the beginning of the semester. Others may want to leave it to be completed at the end of the course in week 13. The choice is yours.

**Topics:**
- Other Desktop Operating Systems

**Homework:**
- List 5 ways Unix excels over Windows.
- List 5 ways Windows excels over Unix.

**Reading:**
- On-line notes

**Week 1:**

**Topics:**
- Introduction to the class, the instructor and the lambda computer system. Learning to log on and use the GUI. First sample of Unix commands.

**Homework:**
- Please complete the on-line assessment.

**Reading:**
- Unix: The Textbook – chapters 1,2

**Week 2:**

**Topics:**
- Introduction to the Unix shell and some standard Unix utilities.
- Getting on-line documentation using `man`

**Homework:**
- Please see the online assignment sheet

**Reading:**
- Unix: The Textbook – chapters 0,3,4
- Please skip the following sections: 0.5.2, 0.5.3

**Week 3:**

**Topics:**
- Working with files and their contents: `cat`, `more`, `less`, `grep`

**Homework:**
- Please see the online assignment sheet

**Reading:**
Unix: The Textbook – chapters 7,9
Please skip the section 9.8

Week 4:
Topics:
   Editing text files: pico, vi and emacs
   Console editors vs. GUI editors
Homework:
   Please see the online assignment sheet
Reading:
   Chapter 5

Week 5:
Topics:
   The Unix file system: security, access control, users, groups, search and processing
Homework:
   Please see the online assignment sheet
Reading:
   Unix: The Textbook – chapters 8,10
   Please skip sections 10.8 and 10.9

Week 6:
Topics:
   Redirection and Pipes: standard output, standard input, standard error
Homework:
   Please see the online assignment sheet
Reading:
   Unix: The Textbook – chapters 12
   Please skip section 12.13

Week 7:
Topics:
   Sharing via file links: hard links, soft links, inodes
Homework:
   Please see the online assignment sheet
Reading:
   Unix: The Textbook – chapter 11

Week 8:
   Midterm Exam

Week 9:
Topics:
Jobs and job control, processes, process IDs, foreground and background execution

Homework:
*Please see the online assignment sheet*

Reading:
Unix: The Textbook – chapters 13

Week 10:
Topics:
Introduction to (Bash) Shell Scripting: basic commands, blocks, iterative control structures

Homework:
*Please see the online assignment sheet*

Reading:
Unix: The Textbook – chapters 15
Please skip the following sections: 4.3.3, 4.3.5

Week 11:
Topics:
Introduction to Programming with Perl: the pro’s and con’s of using Perl, using command-line arguments in Perl

Homework:
After completing the on-line reading do the following:
Write a Perl Scripts to do the following:
1. Print the average of the command line arguments.
2. Print the command line arguments in ascending numeric order.
3. Print the command line arguments in descending alphabetic order.
4. Print the string concatenation of all command line arguments.

Reading:
Introduction to Perl Handout

Week 12:
Topics:
File processing in Perl: reading files, writing files, handling end-of-line

Homework:
After Completing the on-line reading do the following:
Write a grep utility in Perl.

Reading:
Introduction to Perl Handout

Week 13:
Topics:
Other Desktop Operating Systems

Homework:
List 5 ways Unix excels over Windows.
List 5 ways Windows excels over Unix.

Reading:
On-line notes

Week 14:
Project work/special topics
Week 15:
Project work/special topics

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Additional References:

Unix Guru’s Beginners Site:
Unix Review
http://www_unixreview.com/
SSC's Linux Journal
http://www.ssc.com/lj/  
SSC's The Linux Gazette  
http://www.ssc.com/lg/  
IT World  
http://www.sun.com/sunworldonline/