UNIX Tools and Scripting

Spring 2023

CS 2043

Course website: https://courses.cs.cornell.edu/cs2043/2023sp

Faculty Name(s):   Ron DiNapoli
Faculty Email: rd29@cornell.edu
Faculty Office Hours: Gates 445: Mondays, 4:30-5:30 p.m.
                           Via Zoom: Tuesdays, 7PM-8:30PM

Course Staff and Course Staff Office Hours:

Additional Course Staff and Office Hours will be posted on the main course web page (https://courses.cs.cornell.edu/cs2043/2023sp/)

Credits and Credit Hour Options:

- 2.0 Credits, Satisfactory(S)/Unsatisfactory(U)

Prerequisites/Corequisites:

- One programming course or equivalent programming experience
- Access to a computer with the ability to use *ssh* to connect to department servers (Instructions given in class)
- OR, ability to install a virtualization environment (VMWare Player/Fusion) on a personal computer (Instructions given in class)

Time and Location:

- This course meets Mondays, Wednesdays, and Fridays from 12:25 – 1:15 p.m., for a total of 19 lectures (with two lecture periods reserved for taking a prelim and for a prelim review session)

Course Description

UNIX and UNIX-like systems are increasingly being used on personal computers, mobile phones, web servers, and many other systems. They represent a wonderful family of programming environments useful both to computer scientists and to people in many other fields, such as computational biology and computational linguistics, in which data is naturally represented by strings. This course takes students from shell basics and piping, to writing full shell scripts that perform useful tasks. Other topics to be covered include virtualized environments, manipulating streams and files, and utilizing source code control systems.

Course Objectives/Student Learning Outcomes

By the end of the course, a student will be able to:

- Navigate a UNIX command prompt and be able to execute a variety of commands to interact with files, directories, and applications.
- Perform basic operations with common UNIX tools such as grep, sed, and awk; and be comfortable researching how to perform advanced operations using these tools.
- Utilize the UNIX man (help) system to discover additional functionality available with all commands covered in class (as well as any commands not covered in class).
- Construct, execute and debug UNIX shell scripts.
- Utilize the git source control system to store files and their modification history in collaboration with others.

Course Materials

- A software application to be used on Student's computer to allow ssh access to department servers (free options for download covered in first class)
- OR a software virtualization environment (such as VMWare Player/Fusion) that allows running a virtualized UNIX environment on Student's computer (free options covered in first class)

Method of Assessing Student Achievement

This section of your syllabus must be comprised of these two items:

- **Basis of Grade Determination:**
  - Weekly homework assignments (62.5%)
  - One prelim (37.5%)

- **Grading Scale:**
  - Each assignment is graded as S/U and is worth 1 point for S, 0 for U
  - The prelim is graded as S/U and is worth 1-3 points for S, 0 for U
    - Prelim is 15 questions:
      - 14-15 correct (S) worth 3 points
      - 12-13 correct (S) worth 2 points
      - 10-11 correct (S) worth 1 point
      - < 10 correct (U) worth 0 points
  - Course grade determined by accumulated points (6 or more points earns an "S", 5 or fewer earns a "U")

Assignment/Assessment	Percentage of Grade/ Points	Date (where known)
Weekly homeworks	62.5%	Tuesdays at 11:59 p.m.
Prelim	37.5%	In class, Wednesday, March 8, 2023

Course Management

Academic Integrity:
- Absolute integrity is expected of every Cornell student in all academic undertakings. Integrity entails a firm adherence to a set of values, and the values most essential to an academic community are grounded on the concept of honesty with respect to the intellectual efforts of oneself and others. Academic integrity is expected not only in formal coursework situations, but in all University relationships and interactions connected to the educational process, including the use of University resources. Consult the Cornell Code of Academic Integrity for further information: http://cuinfo.cornell.edu/aic.cfm.

Students with Disabilities:
- Your access in this course is important to me. Please request your accommodation letter early in the semester, or as soon as you become registered with Student Disability Services (SDS), so that we have adequate time to arrange your approved academic accommodations.

  - Once SDS approves your accommodation letter, it will be emailed to both you and me. Please follow up with me to discuss the necessary logistics of your accommodations.

- ○ If you are approved for exam accommodations, please consult with me at least two weeks before the scheduled exam date to confirm the testing arrangements.
- ○ If you experience any access barriers in this course, such as with printed content, graphics, online materials, or any communication barriers, reach out to me or SDS right away.
- ○ If you need immediate accommodation, please speak with me after class or send an email message to me and SDS at sds_cu@cornell.edu.

  - ■ If you have, or think you may have, a disability, please contact Student Disability Services for a confidential discussion: sds_cu@cornell.edu or visit sds.cornell.edu to learn more.

Mental Health and Well-being:

Your health and wellbeing are important to me. There are services and resources at Cornell designed specifically to bolster undergraduate, graduate, and professional student mental health and well-being. Remember, your mental health and emotional well-being are just as important as your physical health. If you or a friend are struggling emotionally or feeling stressed, fatigued, or burned out, there is a continuum of campus resources available to you: https://mentalhealth.cornell.edu/get-support/support-students. Help is also available any time day or night through Cornell's 24/7 phone consultation (607-255-5155). You can also reach out to me, your college student services office, your resident advisor, or Cornel Health for support.

Course Schedule:

- A full course schedule will be available via the course web site (https://courses.cs.cornell.edu/cs2043/2023sp/) when published prior to the beginning of the semester. This schedule will list all lectures, assignments (and their due dates) as well as contain information about our prelim and course staff info.
- We will use Canvas to distribute lecture notes.   The course calendar on Canvas will also contain lecture/office hours information.