



Essentials: Communication, Content, and Structure

1 Communications

Class Meetings: Monday, Thursday 14:45 - 16:00, Room HN 1516
Office: HN1090J
Office Hours: Mondays, 12:00 - 14:00
Email: stewart.weiss@hunter.cuny.edu
Telephone: (212) 772-5469

You can see me during my office hours without an appointment. If you need to see me at a different time, you need an appointment. The best way to make an appointment is to send me email with a few suggested times. You can also call my office and leave a message. Regarding email, please note that I will not read email containing MicroSoft Word-encoded documents. If you need to attach a document, it must be plain text or a PDF. Note too that all email must be sent from your “myhunter” account. It is a violation of federal law to have an email conversation about school-related matters using a non-school account (because it might be insecure and open to viewing by third-parties.)

2 Resources

Textbooks: Dave Taylor, *SAMS Teach Yourself Unix in 24 Hours*, any edition greater than or equal to 3. Sams Publishing, 2001. ISBNs: 978-0672337307, 978-0672328145, 978-0672319938. (out of print)
Andrew L. Johnson, *Elements of Programming with Perl*, Manning Publications, 1999, ISBN 1-884777-80-5. (out of print)
Because these books are out of print, you must get them second hand from any one of several used-book websites or dealers. There is always a supply from the major on-line retailers, such as that one whose name is the name of a famous river in South America. Alternatively, the book store should have some copies of both. The link to check this is: <http://hunter.textbookx.com/institutional/index.php?action=browse#books/1736366/>

Computing Facilities: All registered students will be given user accounts on the Computer Science UNIX network unless they already have one. These accounts provide access to all UNIX (Linux) hosts in the network, including those in the 1001B lab on the tenth floor of Hunter North. This lab is available 24 hours a day, 7 days a week, to students enrolled in computer science courses. The accounts also enable students to remotely login to the network using an *ssh* client. See ***Programming and System Access*** below for instructions on how to obtain an *ssh* client for your personal computer.

Course Website: All course materials, including lecture notes, slides, assignments, syllabus, and other resources, including this document, are posted on my website:http://www.compsci.hunter.cuny.edu/~sweiss/course_materials/csci132/csci132_f18.php

Discussion Board: This class will use Piazza as a discussion board. Please see Course Materials, the Web, Piazza, and Blackboard below for the details.

3 Prerequisites

None.



4 Course Objectives and Content

This course is primarily an introduction to elementary computer programming and the UNIX operating system. It also serves as a gateway into the bioinformatics concentration/program. Students are taught fundamental programming principles that can be applied to any programming language. Perl, which is a versatile and easy-to-learn language, is the language taught in this course¹.

Students are given a conceptual overview of the UNIX operating system and programming environment, and a practical introduction to the use of various UNIX tools, such as filters and utilities. This is primarily a pragmatic course with an emphasis on skills acquisition; students will learn how to get things done quickly and easily in a UNIX environment. It also introduces basic concepts of open-source, collaborative software development. Specific learning outcomes are that the student will

1. know what open source software is and how it differs from proprietary software;
2. know the basic types of variables and methods of storing data in Perl;
3. know the basic statement structures, including iteration and conditional and selective branching;
4. know how to create and use functions with and without parameters;
5. know how to redirect I/O within a program and use operating system commands from within Perl;
6. know how to construct and use Perl patterns (regular expressions) for manipulating textual data;
7. know various list processing techniques;
8. write bash scripts that use command line arguments and have conditional control structures;
9. understand the structure of the UNIX file hierarchy, permissions and security within UNIX, and how to customize the `bash` environment;
10. use UNIX filters for manipulating and processing textual data;
11. use pipelines and file globs for processing textual data;
12. identify the variable inputs, outputs, and fixed parameters of a problem statement;
13. use top-down stepwise refinement to convert an informal problem statement into a precise, pseudo-code description of an algorithm;
14. understand the structure of man pages and know how to use the information contained in them;
15. know how to use key word searches combined with filtering techniques to do topic searches in the man pages.

¹ Some discussion about the choice of Perl is due here. Many people will say that Perl is no longer a good choice of language to learn because it has been supplanted by Python. You can read comparisons of the two languages on many web pages online. The major differences for you, as a starting programmer are that:

- Python code might be easier to understand than Perl;
- Python requires that you indent certain code and use tabs and blanks in specific ways, whereas Perl does not;
- There are many bioinformatics modules available in Perl, much more than in Python.

It is possible that this is the last time that this course is taught using Perl because of outside pressure to replace it with R or Python, but for now you should just appreciate how much Perl will have to offer.



5 Assignments, Exams, and Grading

We will cover a lot of material. Students are expected to do all of the specified reading, complete all assignments on time, and work independently, unless stated otherwise. There will be several (between five and seven) programming and scripting assignments, two non-programming assignments, and a single, comprehensive final exam.

The final grade will be based on the weighted average of the assignment grades and the final exam grade. Specifically: the programming assignments are worth 80% in total, the non-programming assignments, 10%, and the final exam, 10%.

The date and time of the final exam is scheduled for Monday, December 17th, from 13:45 to 15:45 in the classroom. Do not make any plans that will prevent you from taking the final exam.

6 Lateness and Incomplete Grades

All assignments must be submitted by their due dates. ***Late assignments will not be accepted.*** Failure to take the final exam counts as a zero grade on that exam. The only exceptions to these two rules are in the case that you have a legitimate medical or personal emergency that prevents your timely completion of homework or sitting for an exam and have notified me in a timely manner about this emergency. I will schedule a make-up exam or allow a homework extension only in that case. I do not give incomplete (IN) grades except to those students who were completing all work throughout the semester but were unable to complete the last few tasks because of legitimate, documented medical or personal problems, and this is entirely at my discretion.

7 Class Schedule

The document at

http://www.compsci.hunter.cuny.edu/~sweiss/course_materials/csci132/csci132_f18_schedule.pdf contains the detailed class schedule.

8 Class Calendar

There is no class on Monday September 3 (Labor Day), Monday September 10, Monday, October 8, nor Thursday, November 22. The last day of class is Monday, December 10. Wednesday, September 5 follows a Monday schedule and thus there is class. The last day to withdraw from a course is Tuesday November 6.

9 Programming and System Access

All students enrolled in the class are given accounts on the Computer Science Department's network. This entitles you to around-the-clock access to all of the Department's publicly accessible computers and access to the Linux Lab, which is equipped with Linux workstations. This lab is normally open "24/7", and if not, from very early in the morning until late at night. The account also enables you to work from home or from another computer by connecting to any of the lab machines ***remotely***. The details are described below.

The advantages of working in the lab, as opposed to working remotely, are that you will be sitting at the console of a Linux host and will not be subject to potential disconnections that can take place when working remotely, you will also be much less affected by network problems than if you connect remotely from outside of Hunter, and you will learn how to use the Linux desktop environments. The disadvantage is that you have to be in school to do this.

Some of the important rules that must be followed when you are physically in the lab and using one of the lab's computers are:



- Never power down a machine for any reason.
- Never leave a machine without logging out.
- Never use lockscreen to lock the screen in your login.

There are other rules. The Department's **System Administrator**, Tom Walter, maintains a webpage: http://www.geography.hunter.cuny.edu/tbw/CS.Linux.Lab.FAQ/department_of_computer_science.faq.htm, that contains useful advice, help, rules, and information about the labs. You must read this webpage before your first login to the system.

In order to login to the network remotely, you must connect, i.e., login, to a computer whose Internet name (i.e., address) is

```
eniac.cs.hunter.cuny.edu,
```

Every student has access to this computer. **eniac** (for short) is a gateway computer - this means that you will be able to login to this computer from any computer that has *ssh* client software and is on the Internet. Once you login to **eniac**, you must immediately login from **eniac** to one of the computers in the Linux Lab, which are named **cslab1**, **cslab2**, **cslab3**, and so on, up to **cslab29**². You cannot *ssh* directly to those machines from outside of Hunter College for security reasons. This is why **eniac** is called the gateway machine, because it acts like the gate into our protected network. Thus, the steps to use a computer, say **cslab4**, in the lab using your machine, are to

1. *ssh* into **eniac** using whatever *ssh* client you have;
2. upon successfully logging into **eniac**, *ssh* into **cslab4** by typing the command

```
ssh cslab4
```

For example, you can first *ssh* into **eniac**, and then when it gives you a prompt such as “\$”, you would type

```
ssh cslab4
```

and re-enter your network password at the prompt from **cslab4**.

Many computers (all Apple and Linux computers) come with a version of *ssh* already installed. If yours does not, you can get one for free. Apple computers have the *ssh* client installed and available by opening the terminal application and typing the *ssh* command, such as

```
ssh eniac.cs.hunter.cuny.edu
```

There are several free versions of *ssh*. *OpenSSH* is an open source version developed for the *OpenBSD* project. *PuTTY ssh* is a free version for the Windows operating systems, available at

```
http://www.chiark.greenend.org.uk/~sgtatham/putty/.
```

10 Course Materials, the Web, Piazza, and Blackboard

All lecture notes will be posted on the course's home webpage (whose URL is above), which does not require special privileges to access. The only thing for which I use Blackboard is for posting of grades, which will be posted in the grade center there. This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates and me. Rather than emailing questions to me, you are to post your questions on Piazza. If you have any problems or need feedback for the developers, email team@piazza.com.

You can find our class page at:

```
https://piazza.com/hunter.cuny/fall2018/csci13201/home.
```

An invitation to join the Piazza discussion board will be sent to your Hunter College email address close to the start of the semester. You should accept this invitation. Your Hunter email address can be used

² or less than 29 if some machines have been taken out of service



for reading and sending messages to the group, or you can change the email address or add another on the settings page. In fact, you can request to join the group with any email address you choose, at <http://piazza.com/hunter.cuny/fall2018/csci13201>

I require that you use the following protocol if you have a question:

1. Check whether the question you want to ask has been posted and answered on Piazza.
2. If it has been answered, you are finished. If not, post the question on Piazza.
3. Anyone in the class can answer the question. If no one else answers the question in a timely manner, I will post an answer to it.

I will ignore any non-personal questions sent to my Hunter email address. Personal questions (such as a questions about a grade or a missed class or alternative times to meet with me) should be sent via private email to my Hunter email address, not to Piazza.

11 Academic Honesty

Unless I state otherwise, all assignments and projects are to be your work alone. If someone else does part of this for you, it is considered to be academic dishonesty. Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The college is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures. In this class, I will enforce the University's Policy on Academic Integrity and bring any violations that I discover to the attention of the Dean of Students Office.

12 ADA Compliance

In compliance with the *American Disability Act of 1990* (ADA) and with *Section 504 of the Rehabilitation Act of 1973*, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (emotional, medical, physical and/or learning) consult the *Office of AccessABILITY* located in Room E1124 to secure necessary academic accommodations. For further information and assistance, the student can call (212-772-4857)/TTY (212-650- 3230).

13 Hunter College Policy on Sexual Misconduct

In compliance with the *CUNY Policy on Sexual Misconduct*, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the *Bill of Rights for Hunter College*.

- Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).
- All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.
- CUNY Policy on Sexual Misconduct Link:<http://www.cuny.edu/about/administration/offices/1a/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>



14 Changes to This Syllabus

Except for changes that substantially affect the implementation of the grading statement, this syllabus is a guide for the course and is subject to change with advance notice. Any changes will be posted to the course website and to the Piazza group for the course.