Supplemental Instruction

This course receives support through the Supplemental Instruction program. Our SI Leader is Elona Selenica. Keep an eye out for an announcement from Elona regrading supplemental instruction.

Course Summary

This course covers the concepts underlying all computer systems and how they affect the correctness, performance, and utility of application programming. We will cover, in particular, information representations, program representations, and program execution.

Learning Objectives

Upon successful completion of this course, students should be able to:

- Use C's bit operators to manipulate data
- Explain how specific kinds of data (numbers, text, instructions) are stored in a memory
- Simulate the execution of various x86 assembly instructions
- Explain how a buffer overflow attack works as well as carry one out
- Reverse engineer parts of a compiled program to understand what it is doing
- Understand programs that use arrays, structs, and pointers in the C language

Prerequisites

The prerequisites for this course are data structures (CSC300 or CSC393) and discrete math (MAT140). The assumption is that you are already familiar with structural programming concepts like branching, loops, and functions, as well as structured data like arrays and objects.

The C programming language and the UNIX environment

We will be using C and UNIX extensively in this course. It is used throughout the book and in the lectures as well as on practice problems, the take home labs, and the exams. However, both the book and the lectures will spend minimal time teaching you these tools. You will need to become very comfortable with both by spending time interacting with the server for the class as well as consulting references. The assumption is that at this point in your studies, you can mostly teach yourself how to

use these tools and class time is better spent on more advanced topics. I will provide a very brief introduction just to get you started, and I will answer any questions students have about C and Linux in class, but I will not be using class time to teach you how to use C or Linux. Students are expected to pick up C and UNIX on their own. This will require a great amount of time reading the C text for the course, interacting with the Linux server, writing and debugging programs, and looking things up in UNIX and C manuals. Do not underestimate the amount of extra time this will take.

Grading Policy

Your overall grade for the course will be computed as follows:

Labs (takehome)	30%
Online quizzes	10%
Practice Problems	10%
Midterm exam	25%
Final exam	25%

I do not accept late submissions on any work (labs, quizzes, and practice problems) and students must take the exams on the scheduled dates.

Letter grades will be assigned according to the table below; however, the instructor reserves the right to adjust the scale in the student's favor. In other words, the table indicates the minimum letter grade you will receive for the given overall percentage. You may receive a slightly higher grade if the instructor deems that an adjustment is necessary.

93-100	A
90-92.9	A-
87-89.9	B+
83-86.9	B
80-82.9	B-
77-79.9	C+
73-76.9	C
70-72.9	C-
67-69.9	D+
60-66.9	D
0-59.9	F

Textbooks and Printed Resources

Computer Systems: A Programmer's Perspective, 3rd Edition.   Bryant & O'Hallaron, Prentice Hall/Pearson, 2016. **ISBN: 978-0134092669**

Programming in C, 4th edition.   Kochan, Prentice Hall/Pearson, 2015. **ISBN: 978-0-321-77641-9**

Important: Make sure you have access to the correct version of the text books. **Verify the ISBN!** There are other versions of CS:APP out there (still 3rd edition, but a different ISBN) that have different problems. Students are responsible for answering the questions as they appear in the required book with the ISBN number above. Answers to different problems will not earn any points.

Tentative Schedule

Below is a tentative schedule of topics including a list of readings from the text books. The schedule also includes a list of practice problems that you should be able to answer. A subset of these will be assigned as graded practice problems, but you should be able to answer all of the questions listed below.

Note #1: In the schedule below, I have highlighted chapters 9 and 10 in the *Programming in C* book, because these are the places where C is most significantly different from Java.

Note #2: The practice problems listed are the questions that you should be able to answer on a quiz or exam. Some of them are explicitly assigned as part of the practice assignments. However, do **not** rely on this table when trying to figure out which questions are due on a practice assignment. You must read the instructions on each individual practice assignment submission folder on D2L to see which questions you are required to answer.

Lab Projects

The heart of this course is the labs that students will be doing. Each of these labs requires a significant amount of time and work to complete. They really are projects and not simple homeworks. Students are

Week Date	CS:APP	Problems you should be able to answer on quiz/exam	Programming in C
Week 1	Section 2.1	2.1-2.5, 2.7-2.16	Chapters 2, 3, 8, **9**
Week 2	Sections 2.2, 2.3	2.17-2.34, 2.38, 2.40, 2.42-2.44	Chapters **10**, 11, 17
Week 3	Sections 3.1-3.4	3.1-3.5	Chapter 12, 13
Week 4	Sections 3.5	3.6-3.11	Chapters 4, 5
Week 5	Sections 3.6	3.13, 3.16-3.18, 3.20, 3.21, 3.23-3.27, 3.29-3.31	Chapter 6, 7
Week 6	Midterm		
Week 7	Sections 3.7	3.32, 3.33, 3.35	
Week 8	Section 3.8	3.36-3.40	
Week 9	Section 3.9	3.41-3.45, 3.48	
Week 10	Section 3.10	3.46, 3.48	

urged to start early. Each lab has multiple pieces and is automatically graded so you can check your progress as you go. Submit early and often. Partial credit is better than no credit.

All labs are individual work. Students are expected to solve the problems on their own. Searching for answers to the problems online is considered cheating and will result in an F for the course. You are

certainly welcome and encouraged to seek help with how to use the various tools. If you are ever unsure about whether some reference/resource is allowed, please just ask.

Quizzes

Quizzes will be handled online on the D2L site for the course. Quizzes must be completed by 11:59PM on the day they are due (typically, the day before a class usually meets). D2L enforces the deadline, so make sure you finish early and submit on time. **Note:** You can save each problem as you complete it, but saving the problems is not the same thing as submitting. Make sure to submit when finished. Also, you may retake the quiz as often as you like to try to improve your score.

Students should expect about one quiz per week. Also, students are allowed to work together in trying to answer/understand the online quiz questions. What is not allowed is simply getting the answer from another student.

Homework (practice problems)

I will periodically post problems sets from the practice problems in the CS:APP text or a short coding assignment in a dropbox on D2L. **These problems come from the book with the ISBN given for the required text book. Make sure you have the correct version of the text!** Students are required to complete these assignments; however the grading will be less formal. (Your grade is really based on completeness rather than from correctness.)   The problems are meant to serve as practice and to generate discussion so students may work in groups on these practice homework problems; however, each student must make their own submission.

The expectation is that you answer the questions without looking at the answers in the back and only check your answers once you have attempted the problem. Since the answers are given in the book I will only go over the solution to the problems if you ask question about a problem. If you don't understand the answer in the book or why your answer is wrong, you need to ask a question in class.

Pay close attention to the submission requirements for each homework assignment as provided in the D2L dropbox for the assignment. Again, D2L enforces the deadline, so make sure to submit on time, even if it is incomplete.

Exams

Both the midterm exam and the final exam will have the format of a D2L quiz. The midterm exam must be taken on May 6 or May 7. The final exam must be taken on June 10 or June 11. Both exams will be timed and can only be taken in one sitting, so set time aside for the exams.

Course Server and Required Software

All lab work must be done on the UNIX server for the course. This will require you to have some kind of SSH client. You can find a link to PuTTY (the program I use in class) in the Content section of D2L.

I have generated accounts from the official class roster on March 30 at 8AM. If you cannot login, contact the instructor immediately. Note that if you registered late for the course, your name may not have been on my roster when I generated accounts, so you need to verify that you have access as soon as possible.

The hostname is marrero373.cstcis.cti.depaul.edu. Your username is the first letter of your first name followed by at most the first 7 characters of your last name. (Do not include hyphens, spaces, or apostrophes.) Your password is your DePaul student ID including leading zeroes if there are any. Note that as a security measure, nothing will be displayed on the screen as you type in your password. Please change your password as soon as you login by typing in "passwd" (without the quotes) and then following the instructions. Again, nothing will be displayed on the screen as you type in your new password.

You will also need to become familiar with the text/terminal based tools, including the editor (either emacs or vi), the compiler (gcc), and the debugger (gdb). See the Reference Documents module under Content on D2L if you are unfamiliar with these tools or with the UNIX command line interface.

Please be aware that I may look at the files under your account on the server. Please do not place anything on the server that is not related to the course or that you do not want me to see.

Email and Discussion Forum

Email and the discussion forum on D2L is the primary way I communicate with students outside of class. To make communication as smooth as possible, please make sure to do the following:

- Make sure the email address listed under "demographic information" at http://campusconnect.depaul.edu is correct. All my emails to you will go to that address.

- All students must subscribe to the discussion forum on D2L. Students should use it to post questions about the course, including questions about lectures and assignments, but please do not post any code from the labs on the forum nor should you discuss solutions to the labs on the forum. Posting your question on the forum allows other students to answer the question and so you could get your answer faster. Also, any questions I receive by email that are not of a personal nature will be posted to the forum together with my answer.

- Send me email from an address that identifies who you are. You have the best chance of getting through the email spam filter if you use your DePaul email address. You have the greatest chance of the email being filtered or of me ignoring it if you send it from an address that I cannot recognize immediately as a student in my class. (I once had a student send me email from way2sexy@hotmail.com and complain 2 weeks later that I wasn't answering his email.) Also

include the course number (CSC373) in the subject of all emails. This will make it easier for me to spot your email and will eliminate the possibility that my first response would be "What class are you in?"

- If your question was answered in the lecture or in another email/post, I will simply refer to the lecture or post. So if you did not understand something I said in class or in an email, be specific. Point out exactly what you didn't understand in my prior communication so that you don't just get a pointer to the lecture video, email, or post.

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at http://academicintegrity.depaul.edu/. If you have any questions be sure to consult with your professor.

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at:
http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: csd@depaul.edu.

Lewis Center 1420, 25 East Jackson Blvd.
Phone number: (312)362-8002
Fax: (312)362-6544
TTY: (773)325.7296