CSC 373 Computer Systems I

Winter 2023 - 2024

Overview

This course is the first of a two-course sequence covering the concepts underlying all computer systems and how they affect the correctness, performance, and utility of application programming. This course introduces C programming and focuses on machine representation of information and programs.

Instructor

Dr. Zhen Huang

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Office hours

My office hours for this course are held via zoom and their details are posted on the course web page on D2L. You may also come to my office hours in person, but you will need to email me the day before. I encourage you to get help if you need it. Asking questions about the assessments or other course materials can improve your understanding enormously. I will not judge you for needing help. I will help you.

Prerequisites

You must have taken (CSC 393 or CSC 300) and MAT 140.

Learning goals

After the successful completion of this course:

- you will have basic C programming skills;
- you will understand how integers, strings, arrays and other structures are represented and manipulated at the machine level;
- you will understand how programs are represented at the machine-level;
- you will be able to read, understand, and debug 64-bit Intel Assembly code in GAS (GNU Assembler) format;
- you will know how to take advantage of the parallelism in modern CPUs to optimize program performance;

Course materials

This course materials are hosted on the course web page on D2L, while the course discussion forum is hosted on Discord. The course materials consist of lecture videos, lecture slides, homework assignments, lab assignments, quizzes, exams, and links to online resources. **Note that you are expected to check the course web page and the discussion forum regularly.**

Each week you are assigned lecture videos to watch. Some practice problems are usually listed at the end of each lecture video. Solving these practice problems is important for you to master course materials. You are expected to complete these practice problems after watching the lecture videos, although they are not graded.

Participation on the course discussion forum is another important part of the course. Particularly answering the questions of other students on the discussion forum is highly encouraged as that will not only help other students but also improve your own understanding of the course materials.

Synchronous zoom meetings

I will hold 60-minute synchronous zoom meetings from 1:30pm to 2:30pam on Tuesdays. The zoom link will be posted on the course web page. In the synchronous zoom meetings, I will mainly review the homework assignments and labs due that week. I will also discuss additional topics such as real-world applications of bit operations, and the representation of floating point numbers. The synchronous zoom meetings will be recorded and posted on the course web page. Attending the synchronous zoom meetings is optional.

You must make sure that you have the necessary technical resources needed to access the course content and complete class activities. You will need:

- Frequent and continued access to a computer that connects to the Internet.
- A working e-mail account that you check regularly (and that is updated in Campus Connection).
- Access to a software suite such as Microsoft Office (Word, Excel, Power Point).
- The ability to view video files, either in a streaming (Flash) or other common formats (QuickTime, iTunes, 3GP, etc.).
- A webcam on a computer installed with Respondus Lockdown Browser to take exams.

Contacting me

Please get in touch if you have questions or would like to schedule a meeting outside office hours. **Email is the best option.** I respond quickly when possible, but my policy is that **you should receive a response by the next business day** (i.e. an email sent to me on Tuesday gets a response by Wednesday night). **Please ensure you put "CSC 373" in the subject line of your email to avoid any delays**, as my emails are automatically categorized by the subject line.

Additionally, please do not email me questions to which the answer is right here on the syllabus (e.g. when is the midterm?) or posted in a note on the D2L page. I may not answer such emails, so if you do not receive a response, double-check that the answer is not easy to find.

Course calendar

The following gives all the important dates for this course. The topics covered are subject to change.

Week	Topic/Deadline
1	Intro to computer systems, UNIX, and C
2	Machine representation of data
3	Integer arithmetic
4	C arrays, strings, pointers, and structures
5	**Midterm exam**, Intro to machine representation of programs
6	Machine representation of programs
7	Arithmetic and logical operations; control
8	Procedures; arrays and pointers; buffer overflow
9	Intro to optimizing program performance
10	Optimizing program performance
11	**Final exam**

Textbooks

Bryant & O'Hallaron, *Computer Systems: A Programmer's Perspective, 3rd Edition,* Prentice Hall/Pearson, 2016. ISBN: 9780134092669

Kochan, *Programming in C, 4th Edition*, Prentice Hall/Pearson, 2015. ISBN: 9780321776419

Grading

Course assessments include homework assignments, quizzes, lab projects, a midterm, and final exam. The course grade will be computed as follows:

Assessment	Percentage
Homework assignments	16 %
Quizzes	10 %
Lab projects	24 %
Midterm exam	25 %
Final exam	25 %

The final grade in the course will be determined according to the standard D2L grading scheme:

A	95-100%	C	73-76%
A-	91-94%	C-	69-72%
B+	88-90%	D+	65-68%
B	85-87%	D	61-64%
B-	81-84%	F	<61%
C+	77-80%		

I will grade your submitted work within 7 days of the due date. To do well in this course, you should follow the

class regularly, participate in the discussion, read the chapters in the book each week as indicated in the homework assignments, start working on the homework and labs early, and talk to me promptly if you have any problems. The answers to the homework and exam questions, as well as your code, should be written in a way that is rigorous, clear and concise.

Homework assignments

There will be a total of 4 homework assignments. Each homework assignment will consist of several short programming assignments, and/or conceptual problems.

Quizzes

There will be 5 quizzes that focus on conceptual questions and test on basic skills. The quizzes are in the form of D2L quizzes composed of multiple-choice questions, short-answer questions, matching questions, and filling-the-blank questions. For each quiz, you can choose a time to take it in a period of 3 days specific to the quiz.

Lab projects

There will also be a total of 4 labs, each a *major* assignment involving long hours of technical work.

All homework assignments and labs are to be submitted to a course Linux server. The details on how to make the submissions are described in the document for each assignment and lab on the course web page on D2L. All homework assignments and labs must be submitted by the deadline and no later. Any homework or lab not handed in by the deadline will receive 0 points, without any exceptions.

Midterm and final exams

Both the midterm and the final are in the form of D2L quizzes that require the use of the Respondus Lockdown Browser.

Make-up exams will not be given. If you wish to petition for a make-up exam, you must notify me at least one week in advance and provide documented evidence of the emergency that will cause you to miss the exam. Failure to contact me in advance of the exam date and time will disqualify you from being allowed to take a make-up exam.

Lateness and absence

No late homework, quiz, or lab will be accepted. If you don't hand in a homework/quiz/lab in time, you will receive 0 points for the homework/quiz/lab.

Feedback for me

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 Campus Connect: http://campusconnect.depaul.edu/

Other feedback

After the midterm exam, the midterm course feedback on D2L will be available for you to provide anonymous feedback to me. You can also email me feedback about the course. I work hard to make the course effective and interesting. If you let me know what worked for you and what didn't, I may be able to improve the course. Even if I cannot do that in time to help you, future students will appreciate your time. I will too.

Policies

Mental health and academic assistance

Balancing the hard work of achieving your educational goals with the other demands of life is difficult at the best of times. For many of us, for a variety of reasons, things are all the more difficult now. I want to make sure you feel comfortable, not embarrassed, reaching out to me for support. I will also point out where the University has great resources just a phone call or email away. These have been created and maintained for you, so use them. Sometimes people feel like their situation isn't the worst possible, so they assume they do not need help, but don't let that prevent you from reaching out.

- DePaul University Counseling Services – mental health is as important as physical health, and we have professionals just a phone call away: https://offices.depaul.edu/student-affairs/support-

services/counseling/Pages/default.aspx. In emergency, please call (773) 325-7779 or 911.
- The Dean of Students Office can help you with a wide range of topics, including figuring out if you should withdraw or apply for an incomplete: https://offices.depaul.edu/student-affairs/about/departments/Pages/dos.aspx.
- There are lots of additional, more specific resources listed here with the Office of Student Affairs, including crisis hotlines and sexual assault resources (note Title IX refers to a law protecting you from sex discrimination, including harassment and assault): https://offices.depaul.edu/student-affairs/support-services/counseling/Pages/Crisis-Hotlines.aspx.

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.

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/.

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://cdm.depaul.edu/enrollment.

Incomplete grades

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. All incomplete requests must be approved by the instructor of the course and a CDM Associate Dean. Only exceptions cases will receive such approval. Information about the Incomplete Grades policy can be found at http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.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