

Syllabus - Computer Systems I (CSC 373)

Section 901, Spring 2023

Instructor: Jack Stillwell

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 focuses on C programming and machine representation of information and programs.

Preconditions

You must have taken an “intro to programming” course. I will assume that:

- You know how to create, debug, compile and run programs in a general-purpose language (Python, Java, C, C++, ...) and use a reasonable programming style (i.e., your code is easy to read and concise).
- You know how to use basic data types (integer, Boolean, and string) including fundamental container data types (arrays or lists).
- You are familiar with execution control structures such as if/else, for, and while statements.
- You are familiar with basic formal logic.

Postconditions

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 Asembler) format in AT&T Syntax;
- you will know how to take advantage of the parallelism in modern CPUs to optimize program performance;
- you will be able to take CSC 374, the follow-up systems course.

Course Calendar

[subject to change]

Week 1	03/30	Into to computer systems, UNIX, and C BO Ch. 1 K Ch. 1-5, 7	
Week 2	04/06	Machine Representation of Data BO Ch. 2 K Ch. 11	Homework 1 Due
Week 3	04/13	Integer Arithmetic BO Ch. 2 K Ch. 11	Homework 2 Due
Week 4	04/20	C arrays, strings, pointers, and structures K Ch. 6, 8-10	Lab 1 Due
Week 5	04/27	½ MIDTERM ½ Intro to Machine representation of programs BO Ch. 3	
Week 6	05/04	Machine representation of programs BO Ch. 3	Lab 2 Due
Week 7	05/11	Arithmetic and logical operations; control BO Ch. 3	Homework 3
Week 8	05/18	Procedures; arrays and pointers; buffer overflow BO Ch. 3	Lab 3 Due
Week 9	05/25	Optimizing program performance BO Ch. 5	Homework 4
Week 10	06/01	Optimizing program performance BO Ch. 5	Lab 4 Due
Week 11	06/08	FINAL	

Modality

In order to optimize the experience of students in both in-person and online sections and to provide the maximum flexibility in the current uncertain times, this course will be delivered as follows:

- **Main course website:** D2L.
- **Lecture recordings:** The weekly lecture slides will be posted on D2L. The in-person lecture will be posted on COL.
- **Class Linux VM:** We will be using a Linux VM to illustrate systems concepts and all homework and lab assignments will be done on the Linux VM. Instructions on how to access your Linux VM account and work within the Linux shell are provided in the week 1 lecture.
- **Getting help:** I have set up a Discord server for the class. Please use it to ask questions regarding the weekly topics and problem set. Feel free to answer the questions if you can! The Discord server invite is posted on D2L. I will hold open office hours, with one-on-one Zoom meetings available upon request. The Zoom office hours meeting link is also posted on D2L. If you need to contact me privately and outside of office hours, feel free to email me directly.
- **Do not DM me on discord unless you ask in channel first.**

Instructor contact info

Jack Stillwell	E-mail jstillwe@depaul.edu
Discord server https://discord.gg/jHwerfQR3E	Office hours In Person: Th – Classroom – 9:00PM – 9:30PM Online: M – 6:00PM – 7:00PM - Zoom https://depaul.zoom.us/j/8955825445

Please use Discord for course/material related questions and email for personal questions.

Texts

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

The course grade will be apportioned as follows:

homeworks	10%
labs	40%
midterm exam	20%
final exam	30%

There will be 4 homework assignments, but only your best 3 count toward the final grade, so you may miss one with no penalty. Each homework assignment will consist of several short programming assignments, and/or conceptual problems. There will also be 4 labs, each a major assignment involving long hours of technical work. 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.

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.

Policies

Lateness and Absence

No late homework or lab will be accepted. If you don't hand in a homework/lab in time, you will receive 0 points for the homework/lab. Midterm and final exams makeups must be arranged at least one week in advance, barring extreme situations.

Deadlines for adds, drops, and withdraws

See the deadlines [here](#).

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 continuing 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

All students are expected to abide by the University's Academic Integrity Policy (which you can find at <http://academicintegrity.depaul.edu/>) which prohibits cheating and other misconduct in student coursework. Publicly sharing or posting online any prior or current materials from this course (including exam questions or answers), is considered to be providing unauthorized assistance prohibited by the policy. Both students who share/post and students who access or use such materials are considered to be cheating under the Policy and will be subject to sanctions for violations of Academic Integrity. 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:

Lewis Center 1420, 25 East Jackson Blvd.

Phone number: (312)362-8002

Fax: (312)362-6544

TTY: (773)325.7296