SPRING 2022: CS 332 – 1B- Systems Programming

Instructional Method

Face-to-Face: This class will be conducted in person, on campus, on the days and times listed in the course schedule. Social distancing and other safety measures must be followed. As described below, there may be online elements to the course.

Lecture: Monday/Wednesday/Friday: 09:05am – 09:55am   HHB 102

LABs: CS 332.532L-Q1: Friday / 08:00am – 08:50am UH 1007

CS 332.532L-U7: Friday / 10:10am – 11:00am UH 1009

CS 332.532L-Q3: Friday / 11:15am – 12:05pm UH 1009

Course Instructor

Dr. Mahmut Unan
Email: unan@uab.edu

Office: UH 4159
Office Hours: Wednesday 02:00pm – 05:00pm

Zoom Link: https://uab.zoom.us/j/9475934695

Teaching Assistants

Jan K, Foksinski (jkf@uab.edu)

Alyssa K, Frost (frost7@uab.edu)

Grant Davis (gdavis19@uab.edu)

TA Office Hours

Alyssa Frost : Wednesday 10:00am – 1:00pm

Jan Foksinski: Friday 12:20pm-3:20pm

Grant Davis: Monday 3:00pm-6:00pm

C Programming Tutor (UH 1008 Collaboration Room)

Ian Toy : iantoy@uab.edu Tuesday/Friday 5:00pm – 6:30pm

Course Homepage

Please login to Canvas at http://www.uab.edu/canvas for up-to-date course information.

Prerequisites

Object Oriented Programming (CS 203) and Discrete Structures (CS 250), both with grades of C or better.

Course Description

Unix architecture and internals with an emphasis on Linux, shell scripting, distributions of Linux for various computing platforms including large and desktop computers, and embedded computing devices, introduction to the C programming language, systems programming in C covering signals and process control, networking, I/O, concurrency and synchronization, memory allocation, threads, debugging, library development and usage.

Textbook (required)

Advanced Programming in the UNIX Environment (Links to an external site.), W. Richard Stevens and Stephen A. Rago, 3rd Edition, 2013. ISBN-13:   9780321637734 (paper) or 9780321638007 (ePub).

URL: https://www.pearson.com/us/higher-education/program/Stevens-Advanced-Programming-in-the-UNIX-Environment-3rd-Edition/PGM238501.html

Recommended Textbooks

C Programming Language, 2nd Edition Brian W. Kernighan , Dennis M. Ritchie
C From Theory to Practice - 2nd edition, Nikolaos D. Tselikas and George S. Tselikis

Objectives/Course Outcomes

1. To introduce the basics of C programming language
2. To introduce concepts of Unix architecture and internals
3. To discuss shell scripting and systems programming
4. To enable students to write, debug, and execute software projects in C

Grading Policy

Midterm Exams (2)	20%
Lab Assignments	20%
Projects (~4)	40%
Final Exam	20%

Canvas will calculate the grade based on these weightings, but this does not reflect our grading scheme. **In short, pay attention to the individual Canvas grades and ignore the computed average.**

Late Submission Penalties

Due date for each assignment will be written on the assignment document. Any assignment turned in after the deadline is considered late and will receive a score of zero. No late submission is allowed in this course

Important Dates (***Tentative)

Martin Luther King Jr. Day: January 17th, 2022, Monday (No Lecture)

Exam 1: February 28th, 2022, Monday, Lecture Time

Exam 2: March 28th, 2022, Monday, Lecture Time

Final Exam(1B): April 27th, 2022, Wednesday 08:00am – 10:30am

Grading Scale

The following scale will be used to determine final grades.

A = 100-90%   B = 80-89%   C = 70-79%   D = 60-69%   F = < 60%

Makeup Policy

Midterm exams cannot be made up except for extraordinary situations such as serious illness supported by a doctor's certificate. ***The final exam cannot be made up.***

Time Commitment

This class meets three times per week for 50 minutes each time. In addition to class time, you should spend about 6 hours per week reading, studying, preparing for class discussions, and completing assignments and assessments.

Class Attendance

Attendance is **mandatory** for both the lecture and lab. If you know you will be absent for a legitimate reason, let the instructor know. If you are sick bring a doctor's excuse or a written university excuse to resolve the absences. An absence has to be resolved as soon as possible - otherwise it will not be treated as an excused absence.

There will be NO make-up labs. If you miss a lab session you will get zero of the in-class assignment part of the lab, you can still submit the homework and get credit for the homework part of the lab.

Course Netiquette

There are course expectations concerning etiquette on how we should treat each other online. It is very important that we consider the following values during online discussions and email.

Respect: Each student's opinion is valued as an opinion. When responding to a person during the online discussions, be sure to state an opposing opinion in a diplomatic way. Do not insult the person or their idea. Do not use negative or inappropriate language.

Confidentiality: When discussing topics be sure to be discreet on how you discuss children, teachers, and colleagues. Do not use names of people or names of facilities.

Format: When posting use proper grammar, spelling, and complete sentences. Avoid using ALL CAPITALS. This signifies that you are yelling. Avoid using shortcuts/text abbreviations such as "cu l8r" for "See you later."

Relevance: Think before you type. Keep posts relevant to the discussion board topic.

Course Time Zone

All assignment deadlines listed on this syllabus are in Central Time. If you are in a different time zone, including any traveling, you are responsible for calculating the time difference and submitting assignments or attending online meetings on time. Use the U.S. Official Time Zone Site as a reference.

UAB Policies and Resources

Add/Drop and Course Withdrawal

- Drop/Add: Deadlines for adding, dropping, or withdrawing from a course and for paying tuition are published in the Academic Calendar available online. Review the Institutional Refund Policy for information on refunds for dropped courses. It is the student's responsibility to initiate add/drop procedures. Students may drop and add courses online after they have registered and until the drop/add deadline online using BlazerNET.
- Withdrawal: To avoid academic penalty, a student must withdraw from a course by the withdrawal deadline shown in the academic calendar and receive a grade of W (withdrawn).

Failure to attend class does not constitute a formal drop or withdrawal. The official course withdrawal must be completed online in BlazerNET.

DSS Accessibility Statement

Accessible Learning: UAB is committed to providing an accessible learning experience for all students. If you are a student with a disability that qualifies under the Americans with Disabilities Act (ADA) and/or Section 504 of the Rehabilitation Act, and you require accommodations, please contact Disability Support Services for information on accommodations, registration and procedures. Requests for reasonable accommodations involve an interactive process and consist of a collaborative effort among the student, DSS, faculty and staff. If you are registered with Disability Support Services, please contact me to discuss accommodations that may be necessary in this course. If you have a disability but have not contacted Disability Support Services, please call (205) **934-4205** or visit the DSS website.

Title IX Statement

The University of Alabama at Birmingham is committed to providing an environment that is free from sexual misconduct, which includes gender-based assault, harassment, exploitation, dating and domestic violence, stalking, as well as discrimination based on sex, sexual orientation, gender identity, and gender expression. If you have experienced any of the aforementioned conduct we encourage you to report the incident. UAB provides several avenues for reporting. For more information about Title IX, policy, reporting, protections, resources and supports, please visit the UAB Title IX webpage for UAB's Title IX Sex Discrimination, Sexual Harassment, and Sexual Violence Policy; UAB's Equal Opportunity and Discriminatory Harassment Policy; and the Duty to Report and Non-Retaliation Policy.

E-mail

Every student will be required to use his/her official email address that is blazerid@uab.edu. New students must login and configure their email addresses. For more details on obtaining blazerid and configuring email please see: http://www.uab.edu/blazerid. All email communications will be made using this address. Additional instructions or announcements will be sent by e-mail, so check your mail often - at least twice a day (once in the morning and once at night). Also check the course Canvas page for up-to-date information and announcements.

Communication Policy

Canvas Discussion Board: Canvas has a great feature called "Discussions" and it will be our **first stop** to ask "general questions" such as if you don't understand the concept or course management questions that you can't find in the syllabus. We encourage all the students to use this platform effectively. We will be watching the discussions closely, thus do not hesitate to answer your classmate's question. Even though your answer is not correct, it will be addressed by the Teaching Assistants or the instructor. Since everyone will get a notification about your question, this platform is the fastest way to get an answer. *You are not allowed to share any solution or your code on the discussion board.*

Teaching Assistants: You can use Canvas message or direct email to reach any Teaching Assistant and ask questions related to your assignments. Teaching Assistant will be replying to your emails/messages within **24 hours on weekdays** and a slower response on weekends (Emails received after 5 pm on Friday might be answered on Monday). We suggest all students to use your time efficiently, start working on your assignment as soon as possible to avoid any last-minute problems. Include *<prefix, course number, and section code>* in the subject line of your email for a faster response. If you need to share your code with your TA, please use Canvas message because UAB email most of the time doesn't allow you to attach your code.

Course Instructor: If you couldn't get sufficient help from discussion board or Teaching Assistant, feel free to send a message/email to your instructor. If you have a private issue that you don't want to discuss with your TAs, you are always welcome to send an email to your instructor. Instructor will be answering all messages and e-mails within **3 business days**. Please note that instructor will be teaching 4 courses this semester and has more than 350 students and other administrator roles in the department.

Covid19 and Mask Requirement

UAB is very concerned for your continued health and safety. Please consult the Students section of UAB United for up-to-date guidance, because the following information is subject to change as circumstances require.

We strongly urge you to be fully vaccinated. Here is information on the safety of vaccines and on how to get vaccinated at UAB. There are also incentives for getting vaccinated.

Mask-wearing has proven to be one of the most successful mitigation strategies used to combat spread of the various variants of the COVID-19 virus. **UAB requires face coverings indoors on campus-regardless of vaccine status.** Students who do not follow this requirement can be reported to Student Conduct.

Counseling

Student Counseling Services supports students in achieving personal, academic, and lifelong goals by providing individual and group mental health services, prevention and outreach programming, crisis and emergency support, and consultation services. Student Counseling Services advocates for safe and inclusive learning environments in the university community. Further details can be found at: https://www.uab.edu/students/counseling/

Information on mental health & wellbeing can be found at: https://www.uab.edu/students/counseling/mentalhealthmatters

Chapters / Schedule (tentative)

Students are expected to keep abreast of the material covered in the classroom and the lab. Each week you are required to read the chapter(s) in the book corresponding to the topics to be covered in class.

Topics

Introduction to Programming in C

Chapter 1.   UNIX System Overview

Systems Programming in C

Chapter 2.   UNIX Standardization and Implementations

Chapter 3.   File I/O

Chapter 4.   Files and Directories

Chapter 5.   Standard I/O Library

Chapter 6.   System Data Files and Information

Chapter 7.   Process Environment

Chapter 8.   Process Control

Chapter 9.   Process Relationships

Chapter 10.   Signals

Chapter 11.   Threads

Chapter 12.   Thread Control

Chapter 13.   Daemon Processes

Chapter 14.   Advanced I/O

Chapter 15.   Interprocess Communication

Advanced Topics

Resources

Textbook website: https://www.pearson.com/us/higher-education/program/Stevens-Advanced-Programming-in-the-UNIX-Environment-3rd-Edition/PGM238501.html

Author's website: http://www.apuebook.com/apue3e.html

The Linux Command Line By William Shotts (a free online book): http://linuxcommand.org/tlcl.php

Academic Integrity Code

The University of Alabama at Birmingham expects all members of its academic community to function according to the highest ethical and professional standards. Students, faculty, and the administration of the institution must be involved to ensure this quality of academic conduct. Please review UAB's Academic Integrity Code located at

https://www.uab.edu/one-stop/policies/academic-integrity-code

Violations of this honor code will result in a variety of sanctions as provided in the Code. A minor offense may result in a reduced grade for the associated assignment or homework. A major offense may, at a minimum, result in the failure of the course. Repeat offenders may be expelled from UAB.

It is important to note that

1) "All students are expected to be familiar with the Academic Integrity Code and abide by it. By their continued enrollment at the University, students reaffirm their pledge to adhere to the provisions of the Academic Integrity Code."
2) Unauthorized assistance from third parties including a commercial service such as chegg.com or engaging another person (whether paid or unpaid) constitutes an act of cheating and is interpreted as a major offense in the Academic Integrity Code, resulting in F in the course (see chart below). Further, students are prohibited from posting homework, assignments or examination questions to non-UAB web sites without explicit authorization by the instructor.
3) UAB requires both faculty and students uphold the standards for academic integrity. Students who witness academic misconduct have a duty to report it.

Suggested Penalties for Violations of Different Severity

(Page 21 of Academic Integrity Code)

1st offense minor	1st offense moderate 2nd offense minor	1st offense major 2nd offense moderate 3rd offense any	PROPOSED SANCTION
✓	✓	✓	Academic Integrity workshop
✓			Reduced grade on assignment
✓			Additional Course Work
✓			Opportunity to revise/repeat
✓	✓		Failure of Assignment
✓	✓		Reduced course grade
	✓	✓	F in Course
	✓	✓	Academic Probation
		✓	Academic Suspension
		✓	Academic Expulsion

Please also review UAB Student Code of Conduct at the linked below:

https://www.uab.edu/students/accountability/student-conduct-code

https://www.uab.edu/policies/content/Pages/UAB-UC-POL-0000781.html