CS/SE 3377.0W2/0W3 *Systems Programming in Unix and Other Environments*
Optional "live" Lectures: Mondays 5:30-6:45pm & Thursdays 2:30-3:45pm in MS Teams (All the recordings will be accessible by all the students in this course).

Websites: elearning.utdallas.edu (assignment submissions, grades, etc.)
utdallas.box.com/v/cs3377-fall21 (slides & programs)

Instructor	Dr. Jey Veerasamy - MS Teams virtual office room bit.ly/jey-f21 Online Office hours: Tuesdays 10:30am-12noon & Wednesdays 6-7:30pm OR by appointment (message me in MS Teams chat to fix appointment) Communicate using MS Teams chat, use email jeyv@utdallas.edu only as backup
TA	TBD

Course Description

CS 3377 - Systems Programming in UNIX and Other Environments (3 credit hours)
Basic UNIX concepts, commands and utilities, organization of UNIX file system including links and access control, creating and managing UNIX processes and threads, implementing algorithms using shell scripts, basic networking concepts including socket and client-server programming, inter-process communication using pipes and signals, using a version control system to manage work, and introduction to cloud computing. Design and implementation of a comprehensive programming project is required.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

(including required prior knowledge or skills)
CS/CE/TE 2336 with a grade of C or better or equivalent.**

That is, you should have also completed CS1336 & CS1337 (or equivalent courses) in C/C++ programming and/or have a proficient programming experience with C/C++. Otherwise, please contact the instructor immediately for your case under consideration and to grant the instructor's approval. No student without C/C++ programming experience is allowed to register for cs3377.

Note for transfer students without C/C++ programming course/experience, you should take cs2335 to meet the prerequisite for cs3377.

Student Learning Objectives/Outcomes

1. Ability to use the UNIX operating system interactively as a user (commands)
2. Ability to express algorithmic solutions using shell scripting (utilities)
3. Ability to understand and use regular expressions
4. Ability to use the UNIX programming environment (editor, compiler and linker)
5. Ability to understand UNIX processes (creation and control)
6. Ability to perform input/output of binary files

7. Ability to use inter-process communication (pipes, sockets and signals)
8. Ability to understand the UNIX file system
9. Ability to understand and use version control system

Required Textbooks and Materials

Both books are available online & free via UTD Library => eBook => O'Reilly Online Learning (need to login with UTD email address to access these ebooks):

1. *A Practical Guide to Linux® Commands, Editors, and Shell Programming*, 3ed. Mark G. Sobell. Prentice Hall. © 2012. ISBN-10: 0-13-308504-X. ISBN-13: 9780133085044
   Note. 4ed is also available and acceptable. This book is referred as [Sobell].
   Sobell source code: http://www.sobell.com/CR3
   https://learning.oreilly.com/library/view/practical-guide-to/9780134774626

2. *Advanced Programming in the UNIX® Environment*, 3e. W. Richard Stevens and Stephen A. Rago. Addison-Wesley. © 2013. ISBN-10: 0-321-63773-9. ISBN-13: 9780321637734 This book is referred as [APUE].
   APUE source code: http://www.apuebook.com/code3e.html
   https://learning.oreilly.com/library/view/advanced-programming-in/9780321638014

Tentative Academic Calendar

***Note:** The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.

Week #	TOPIC/LECTURE
1	Course Syllabus & Course Introduction. 1. Prerequisite Form 2. Unix/Linux Introduction 3. First log in to cslinux1.utdallas.edu (to download, install and try mobaXterm or ssh or putty to connect cs1, etc.)
2	Unix/Linux Introduction & Commands • Connect to cs1 from your laptop • Learn basic Unix/Linux Commands • Simple File editing with vi editor. • Simple C programming with hello.c
3	Unix, Linux Commands (Advanced) File Systems (Sobell Ch4) Shell (Sobell Ch5) Editors (Sobell Ch6) Makefile
4	Bourne Again Shell – Bash shell

	(Sobell 8, 10) Shell Script Programming with bash
5	Python prog (Sobell Ch12) Python Tools
6	Unix/Linux System Prog & API APUE Ch01
7	Unix File Systems and IO, and API (APUE Ch03-Ch04)
8	Unix/Linux Process (APUE Ch07-Ch08) **Test 1 - October 16 in Testing Center (To be confirmed)**
9	Spring Break
10	Shell and Signal (APUE Ch09-Ch10)
11	Thread Programming (APUE Ch11)
12	Inter-process Communication (APUE Ch11.6 & Ch15)
13	Socket Programming (APUE Ch16)
14	Socket Programming Client-Server Concurrent Server
15	Advanced Topics VCS (Git, Github, etc) Oracle VirtualBox
16	Advanced Topics Review for Test2
17	**Test 2 – December 4 in Testing Center (To be confirmed)**

Proctored Final Exam Procedures
If your course has a proctored exam requirement, please see the UTD Testing Center webpage and Distance Learning Proctored Exams webpage to make arrangements.

Grading Policy
Letter grades will be assigned as follows:

97-100	A+	94-96	A	90-93	A-
87-89	B+	84-86	B	80-83	B-

77-79	C+	74-76	C	70-73	C-
67-69	D+	64-66	D	60-63	D-
Below 60	F				

Tests	30%	There will be 2 tests (mid-term 15% and final 15%) You need to register for your seat in the testing center to take each test. Instructor will confirm with the testing center and let the students know. Each test will have 30-50 randomly selected questions from a huge test bank. Please help to keep the tests as fair as possible - do not discuss the questions with your classmates. Any make-up tests will be arranged and scheduled during the same week at the discretion of the instructor. There should be a valid reason for scheduling make-up tests & they need to be coordinated with the instructor.
Assignments	40%	There will be weekly assignments in this course & they will have equal weightage – all of them together will contribute 40% to the final weighted grade. You are expected to start working on them as soon as they are posted so that you have "enough" time to work through the glitches, still manage to submit on time. Do not expect me or the TA to rescue you at the 11th hour! Late submissions will NOT be accepted. If you cannot complete an assignment due to medical condition, send the Doctor note to the professor using MS Teams chat. You will be exempted from that assignment. Additionally, one lowest score will be auto-dropped when computing the weighted total. Complexity level of each assignment may vary – students will be expected to spend a few hours in a computer every week. You can upload each item many times but the last submission will be graded. Late submissions will NOT be accepted. My advice is to submit whatever you have done (your best effort) before the due and/or by the due date, and to seek for any further discretion and/or consideration if you may need. All these weekly activity items should be done in Unix, Linux or Mac, and you will hand-in your projects directly in Linux. If the instructor believes a student has committed an act of plagiarism, student will be referred to UTD administration directly - Review utdallas.edu/conduct/integrity & utdallas.edu/conduct/manage-dishonesty for details.
Activities	30%	There will be 1 or 2 activities every week within a day after each class (relatively simple compared to Assignments - should not take more than 1 hour each) to ensure that you are keeping up

		with the class content (complete tutorials at home, finish simple exercise or take online quiz etc) - all of them will contribute equally & together they will account for 30% of your final grade. So, you are strongly encouraged to keep up with the course every week. Late submissions will NOT be accepted. If you cannot complete an activity due to medical condition, send the Doctor note to the professor using MS Teams chat. You will be exempted from that activity. Additionally, two lowest scores will be auto-dropped when computing the weighted total.

Course & Instructor Policies

Instructor is responsible for grading all the tests. TA will be responsible for grading all weekly activity items & assignments. So, contact the TA directly using MS Teams chat for any grading related discrepancies. It is not possible to give a detailed feedback for each weekly assignment or test question due to large number of students enrolled in our classes. If you need more details/clarification, you are encouraged to meet the TA/instructor via online during office hours & get personal attention. Email is NOT preferred. If you are stuck with your assignment, it is better to turn in what you have and inform us. We will revise your submission and give some guidance. Your next submission will override the previous submission - TA will always grade the latest submission for each project. You can use MS Teams chat to get help for weekly assignments. Include the detailed problem description & applicable error messages, source files too. Do not just say "my program does not work" and expect us to figure out everything - you need to help us to help you efficiently. We expect to complete grading assignments (projects), weekly activities or quizzes, and tests in a week or so. However, when the schedule gets too busy, it can be as long as 2 weeks before the grades are assigned. It is the students' responsibility to review the grade details when they become available and follow up for clarifications if needed.

Classroom Citizenship

Please review the UTD policy and guideline on Student behavior and conduct, academic honesty and integrity in https://www.utdallas.edu/conduct/integrity/ and UTD BAIT team in https://www.utd.edu/conduct/bait/

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same: “As a Comet, I pledge honesty, integrity, and service in all that I do.”

Plagiarism has no place in the college education. UTD policies require all the professors to forward all suspicious cases to academic disciplinary committee. So, do not copy the code from others & do not give your code to others.

Classroom Conduct Requirements Related to Public Health Measures

UT Dallas will follow the public health and safety guidelines put forth by the Centers for Disease Control and Prevention (CDC), the Texas Department of State Health Services (DSHS), and local public health agencies that are in effect at that time during the Fall 2021 semester to the extent allowed by state governance. We strongly encourage all Comets to get vaccinated and wear face coverings as recommended by the CDC. Check the Comets United: Latest Updates webpage for the latest guidance on the University's public health measures. Comets are expected to carry out Student Safety protocols in adherence to the Comet Commitment. Everyone is expected to complete the Required Daily Health Screening. Those students who do not comply will be referred to the Office of Community Standards and Conduct for disciplinary action under the Student Code of Conduct – UTSP5003.

Academic Support Resources

The information contained in the following link lists the University's academic support resources for all students. Please see http://go.utdallas.edu/academic-support-resources.

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus. Please go to http://go.utdallas.edu/syllabus-policies for these policies.

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