CS351 Design of Large Programs

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Instructor

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Office Hours: M 1:30-3:30 pm

Graders

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Lectures

Day/time: Tuesday and Thursdays 9:30-10:45 a.m.
Location: Mitchel Hall 102

Labs

- **Section 3 (CRN 60675)**
  Time: TR 11:00-11:50 a.m.

- **Section 4 (CRN 60682)**
  Time: TR 12:00-12:50 p.m.

- **Feel free to go to any of the assistants for help. You aren't limited to the assistant for your own lab section.**

JDK

We will be using Azul JDK 16 for this class. This is because it comes bundled with JavaFX which will be utilized later in the semester. The link to the download page can be found on learn under the "Key Documents/Links" section. Make sure you download the "JDK FX" version!

Learning Outcomes

1. An understanding of object-oriented design and object-oriented programming.
2. Ability to work both independently and as part of a varying size group.
3. Ability to architect software artifacts of varying sizes and complexity.
4. Ability to document the design of software artifacts.
5. Ability to faithfully transform a design into a code base.
6. Ability to generate robust and elegant code.
7. An understanding of fundamental concepts and techniques related to concurrent and distributed computing.

Course Description

This project-oriented course is intended to help students acquire the design and programming skills needed to perform well in professional settings where they are expected to translate customer needs into functioning code. The emphasis is on understanding the complexities and subtleties of object-oriented design and on leveraging off object-oriented programming to deliver large complex programs that are elegant, modular, easy to use, and easy to modify while delivering the expected level of performance. Design and programming concepts are first introduced and illustrated in lectures and later used in the laboratory on a series of projects exhibiting increasing levels of complexity and sophistication. Sequential, concurrent, and distributed design and programming concepts are introduced in this order with the associated projects matching the increase in complexity. Depending on the project, students will be expected to work alone or in small groups. Peer reviews will be an integral part of the laboratory experience.

Schedule of Topics (Subject to change)

Week	Topics
1	Introduction, Object Oriented Design
2	Programming Abstractions, Abstract Data Types
3	Architectural Design Patterns
4	Complex Data Structures
5-7	Design Patterns
8-11	Concurrency
12-15	Distributed Programming

Grading

- 90% Projects
- 10% Lecture, lab exercises, and participation

Late Assignments

Ideally, all assignments will be completed and submitted well before the deadline. However, I am well aware that sometimes this will not be possible due to illness, technical problems, other classes, etc. For that reason, each student is given a pool of ten extension days they may use during the semester, limited to at most three days for any single assignment.

- You may use a maximum of three extension days for a given assignment. I want to be able to discuss the solution to an assignment within a reasonable amount of time after the deadline.
- You have a total of ten extension days over the course of the semester. It is up to you if you want to turn in three assignments three days late, five assignments two days late, every assignment one day late, or some other variation. You do not have to use them at all.
- Weekends count as days, too, so if an assignment is due on Friday and you don't turn it in until Monday, that would use 3 extension days.
- Use your extension days wisely. If you use all of them on early assignments you won't have any left to spend on a difficult assignments later on.
- If you turn the assignment in after 3 late days or if you are out of late days, then you will lose 33% first day, 66% the second day and will receive no credit past that.
- Late days may not be used on the final project

CS Account

If you do not have a CS account already then you should request one by emailing cssupport@cs.unm.edu. In the email you should request a CS account and include a picture of your student id. The email should come from the your unm email.

Americans with Disabilities Act (ADA) Policy Statement

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Accessibility Resource Center (http://arc.unm.edu/)The ARC is there to help you. If you have a condition where you need extra time or a quiet place for exams, I strongly recommend that youtake advantage of their services.

Title IX Sexual Harassment Policy Statement

No form of discrimination, sexual harassment, or sexual misconduct will be tolerated in this class or at UNM in general. I strongly encourage you to report any problems you have in this regard to the appropriate person at UNM. As described below, I must report any such incidents of which I become aware to the university. UNM also has confidential counselors available through UNM Student Health and Counseling (SHAC), UNM Counseling and Referral Services (CARS), and UNM LoboRespect.

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education(see pg 15 –http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (http://oeo.unm.edu). For more information on the campus policy regarding sexual misconduct,

see:https://policy.unm.edu/university-policies/2000/2740.html

Academic Integrity Statement

Each student is expected to maintain the highest standards of honesty and integrity inacademic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student

who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work inquestion and/or for the course. Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others;hindering the academic work of other students; misrepresenting academic or professionalqualifications within or without the University; and nondisclosure or misrepresentation infilling out applications or other University records.

Credit Hour Statement

Federal Credit Hour Definition: A credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:(1) one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester or trimesterhour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or (2) at least an equivalent amount of work as required in paragraph (1) of this definition for other activities as established by an institution, including laboratory work, internships, practica, studio work, and other academic work leading toward to the award of credit hours. 34CFR 600.2 (11/1/2010)

Computer Science Advisement

Whether or not you have been officially admitted to the CS program yet, please consult the Department of Computer Science Undergraduate Advisor with any questions you may have. This is especially important when navigating the prerequisites for certain courses and resolving scheduling issues. More general university advisors are not always familiar with the details of the computer science program.Computer Science Department Website I host some course files on the CS department servers. Sometimes I may make a typo in a link or set the access permissions on a file incorrectly so that it cannot be reached. In those cases, let me know and I'll fix it.It is also possible that the entire CS department website (http://cs.unm.edu) is unreachable for some reason. If that happens, I suggest you email the CS support team directly(email:cssupport@cs.unm.edu), since that will be faster than emailing me and waiting for me to see the message and email support myself. (Unfortunately, it is a bit hard to find the CS support email when the CS site is down, which is why I included here.)

Covid Policies (Subject To Change)

Mask Policy: All students, staff, and instructors are required to wear face masks in indoor classes, labs, studios and meetings on UNM campuses, see the masking requirement. Qualified music students must follow appropriate specific mask policies issued by the Chair of the Department of Music and the Dean of the College of Fine Arts. Students who do not wear a mask indoors on UNM campuses can expect to be asked to leave the classroom and to be dropped from a class if failure to wear a mask occurs more than once in that class. Students and employees who do not wear a mask in classrooms and other indoor public spaces on UNM campuses are subject to disciplinary actions. UNM will periodically evaluate and update the mask policy relative to public health conditions.

Positive Covid Test Results: Students who test positive should use the Self-Report Portal found on the Bringing Back the Pack web page to report their status; as part of the process, students will receive information on staying away from campus, quarantining, etc. Students who are ill (COVID symptoms or symptoms of other contagious illnesses) should not come to campus and will be accommodated by me the same way I would accommodate any student who tells me they are ill or injured and unable to attend class.