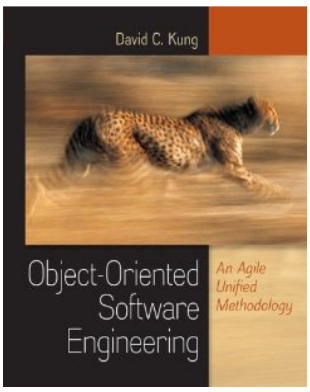


Figure 1: Make sure ISBN is 978-0073376257

CSE 5322 SOFTWARE DESIGN PATTERNS FALL 2017

1 General

Lectures:	TTh 3:30pm-4:50pm, ERB 130
Instructor:	David C. Kung, ERB 532
Email:	k u n g AT u t a DOT e d u, Fax: 817-272-3784
Office Hours:	1:00PM-2:00PM TTh, or by appointment
GTA:	Rodrio Silvadossantos
Office:	TBD, Office Hours: TBD
Email:	rodrigoaugusto.silvadossantos@mavs.uta.edu

2 Course Objective

CSE 5322. SOFTWARE DESIGN PATTERNS (3-0). Study and application of object-oriented software design patterns to software development and maintenance in the object-oriented paradigm. Prerequisite: CSE 5324 or concurrent enrollment.

3 Reference Books

David Kung, "Object-Oriented Software Engineering: An Agile Unified Methodology," McGraw-Hill 2013. (IMPORTANT: Make sure you get the right edition, that is, ISBN must be 978-0073376257 and the cover of the book must look like in Figure 1.)

Erich Gamma, Richard Helm, Ralph Johnson and John Vlissides, "Design Patterns: Elements of Reusable Object-Oriented Software," Addison-Wesley, 1995.

4 Tentative Schedule

Figure 2 shows the tentative schedule.

5 Workload

- One semester team project (30%):

  Each team is required to apply at least 6 distinct patterns. The right patterns should be applied and applied correctly. The project-specific design problems and how patterns solve the problems must be explained adequately during iteration presentations. The project will proceed in three iterations of equal weights. Each student is required to submit a peer evaluation; fail to do so will result in deduction of 1% per iteration.

  Each student is required to present part of the project at least once during the semester. Students' performance in the team is taken into consideration. Each negative point deducts one point from your increment score. So if you get -2 for five categories from one peer, then this reduces your score by 10 points.

- Two individual homework assignments: 30%.

- One final exam 30% (open book but not open note, and no electronic devices are permitted).

- Open-book pop quizzes 10%, no electronic device permitted. There will be an unknown number of pop quiz, which can take place any time during the class and on any class day. If you cannot come to class on time, you need to inform the instructor beforehand; otherwise, no make up quiz will be given unless in medical emergency, which requires a doctor's letter.

6 Grade Distribution

Total Score	>= 85	>= 70	>= 60	>= 50	< 50
Grade	A	B	C	D	F

The grades are computed by a program according to your scores. If you get 84.95 then you will get a "B", not an "A" even if the score is so close to 85.

7 General Grading Criteria

7.1 Team Project

Figure 3 shows a sample grading sheet used in a previous semester. The percentage numbers may change for this semester.

Date	Reading before class (chapters)	Class Activity	Assignment (due date)
8/24		Syllabus, background survey	Background survey
8/29-8/31	4	Team project, teams formed Requirements acquisition	Team project requirements specification (due 9/7)
9/5-9/7	2,4-5	Agile unified methodology (AUM) Planning, and domain modeling	Domain model including brainstorm/ classification sheets/photos, and domain model class diagram (9/14)
9/11		(Census day)	
9/12-9/14	7	Deriving use cases from requirements, abstract and high-level use cases, use case diagram	Project abstract use cases, high-level use cases, and use case diagrams (9/19)
9/19-9/21	8-10	Actor-system interaction modeling. Object-interaction modeling, and sequence diagram. Applying GRASP patterns.	Expanded use cases, scenarios, scenario tables, and informal and design sequence diagrams for selected iteration 1 use cases (9/28)
9/26	11	Deriving design class diagram (DCD).	DCD (10/3)
9/28		Reserved.	
10/3		Iteration 1 submission, no class. Teams are required to revise the weekly submissions according to feedback, and submit an integrated document containing all the revised weekly submissions.	Integrated iteration 1 document (email to TA by 11:59PM today).
10/5	16	Introduction to design patterns, *singleton*. Techniques used by patterns.	As iteration 1 but for iteration 2 use cases and applying patterns whenever appropriate (11/2). From now on, no weekly submissions.
10/10-10/12	16-17	A process for applying patterns. *Bridge, command, proxy, template method, factory method, prototype.*	
10/17-10/19	13, 16	*State, composite, visitor.*	HW1 (11/7)
10/24-10/26	16, 17	*Iterator, strategy, decorator.*	
10/31		Reserved.	
11/2		Iteration 2 submission, no class. Teams are required to work on iteration 2 submission.	Iteration 2 document (email to TA by 11:59PM today).
11/7-11/9	16	*Memento, abstract factory, builder, flyweight, observer, adapter, chain of responsibility*	Work on iteration 3 use cases (due 11/30). HW2 (11/28).
11/14 11/16	15, 21	*Facade, mediater, interpreter*	
11/21		Review for final exam	
11/23		Thanksgiving Holiday	
11/28		Reserved.	
11/30		Iteration 3 submission, no class. Teams are required to work on iteration 3 submission.	Iteration 3 document (email to TA by 11:59PM today).
12/5		Final exam (3:30 pm-4:50 pm)	
12/6		Last day of classes	

Figure 2: Tentative schedule

Team Number																				
Team Members																				
Item Description	%	%	High quality work exceed expectation			High quality work			Good work & main components present			Major components missing, or work is poor			Work quality is very poor			Work is not acceptable at all		
			100	95	90	85	80	75	70	65	60	55	50	45	40	35	30	25	15	0
Requirements	**10**	10																		
Use Case Modeling	**10**																			
Abstract & High-Level Use Cases		2	**Do only for iteration use cases, and revision of expanded use cases of a previous iteration, if any.**																	
Use Case Diagram		3																		
Expanded Use Cases		5																		
Domain Modeling	**15**																			
Brainstorming and classification sheets		5	**Create a new domain model, or expand an existing domain model for domain concepts relating to new use cases.**																	
Domain model class diagram		10																		
Object Interaction Modeling	**25**																			
Scenarios and/or scenario tables		10	**Do only for iteration use cases, and revision of design of previous iteration, if any. If you have applied patterns, then show patterns applied in sequence diagrams.**																	
Sequence diagrams		15																		
Design Class Diagram	**10**	10	**Expand/revise existing DCD with respect to new use cases, show patterns applied.**																	
Pattern Application	**20**																			
Correct identification of patterns to apply		5	**Correctly identify and EXPLAIN the design problems that are specific to the team project, and correctly identify the design patterns to solve the design problems, as well as correctly apply the design patterns. Each team must present explanation of design problems, and how the design patterns solve the design problems.**																	
Correct application of patterns		15																		
Implementation & screen shuts	**10**	10																		
Total	**100**	**100**																		

Figure 3: Sample project evaluation sheet

7.2 Individual Assignments

1) Correctness – the solution adequately solves the given problem
2) Soundness – the solution is well justified
3) Efficiency – the solution is among the simplest ones possible
4) Organization – the presentation of the solution is easy to understand and logically organized
5) Clarity – the solution is clearly stated and tables and figures are professionally produced
6) Grammar, spelling, and writing – correct grammar and spelling, and legible writing

1) – 2) are worth about 60% of the weight and 3) - 6) about 40%.

8 Assignment Rules

1. Late assignments will be accepted before the explanation of the homework assignment in class. Late assignment are subjected to 10% deduction and additional 10% deduction for every 24 hours passing the deadline. After the explanation, no assignment will be accepted. This rule will be consistently applied to every student in all cases, regardless whatever good reason you may have.

2. You are encouraged to discuss homework with your classmates but not allowed to copy the solutions from or share the solutions with anybody. If you violate this rule, then you will receive no credit for that assignment unless you can prove that you are not involved.

3. The GTA will do most of the grading. If you do not agree with the result, contact the GTA first. Please contact the instructor if you cannot reach a consensus. This would help the GTA improve her/his grading skill and avoid inconsistency due to improper interference of the instructor.

4. No additional make-up assignment will be provided for any student to improve grade.

9 Team Member Evaluation Form

Enclosed at the end of this syllabus is a team member evaluation form which must be submitted by every team member after each iteration. Use this form to appraise those team members that you feel their contributions should be credited and provide the instructor information about team members who need improvement. I will keep this confidential.

10 Class Email Alias

I will broadcast important messages, homework assignments, project descriptions etc. to students of the class. The messages will be sent to a contact list which should include your UTA email address. You should receive an email before the class. If not please contact me immediately so that I can add you to the list. It is your responsibility to contact me when your university email account has changed.

11 Your Standing and Class Statistics

After each assignment or test has been graded, the TA will distribute to each of you your scores and grade up to that assignment or test. You will also receive class performance statistics. The TA is required to timely distribute these to you. Please feel free to inquire the TA or me if you do not receive these in due time.

12 SE Code of Ethics and Professional Practice

ACM/IEEE Software Engineering Code of Ethics and Professional Practice

For the full version, see `http://www.acm.org/serving/se/code.htm#full`.

Software engineers shall commit themselves to making the analysis, specification, design, development, testing and maintenance of software a beneficial and respected profession. In accordance with their commitment to the health, safety and welfare of the public, software engineers shall adhere to the following Eight Principles:

1. PUBLIC - Software engineers shall act consistently with the public interest.

2. CLIENT AND EMPLOYER - Software engineers shall act in a manner that is in the best interests of their client and employer consistent with the public interest.

3. PRODUCT - Software engineers shall ensure that their products and related modifications meet the highest professional standards possible.

4. JUDGMENT - Software engineers shall maintain integrity and independence in their professional judgment.

5. MANAGEMENT - Software engineering managers and leaders shall subscribe to and promote an ethical approach to the management of software development and maintenance.

6. PROFESSION - Software engineers shall advance the integrity and reputation of the profession consistent with the public interest.

7. COLLEAGUES - Software engineers shall be fair to and supportive of their colleagues.

8. SELF - Software engineers shall participate in lifelong learning regarding the practice of their profession and shall promote an ethical approach to the practice of the profession.

13 Request for Early Leave

Requests for permission to go home before the final exam date will never be granted except for medical reasons and with a proof from a doctor. Students who do not participate in the final exam will not receive the scores for the final exam except that the final exam is waived

Project Team Member Evaluation Form

Team#___ Iteration#____ Course#_____ Fall / Spring Year_____

Please submit hardcopy or fax to David Kung 817-272-3784, EMAIL NOT ACCEPTABLE

Most team members perform well in a project team. However some members perform extremely well and some very poorly. It is constructive to encourage the outstanding members and inform those who need improvements. This form allows you to convey such information to your team members whenever you deem there is such a need.

Please give an integer rating of -2 (poor), -1 (below average), 0 (average), +1 (above average), or +2 (excellent) for some of the aspects of the members you want to convey your assessment. Your evaluation might be reproduced (to hide your identity) and presented to the relevant members. However, the identity of the evaluator will be kept absolutely confidential in all cases.

Member name					
Group meeting attendance					
Group discussion					
Individual assignment					
Technical contribution					
Organizational contribution					
Overall performance					

Comments: (use additional sheets if needed)

Name: _____ Signature: _____ Date: _____

14 Other Information

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. Students will not be automatically dropped for non-attendance. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the Americans with Disabilities Act (ADA). All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: The University of Texas at Arlington is committed to upholding U.S. Federal Law Title IX such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence. I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System Regents Rule 50101, 2.2, suspected violations of universitys standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the students suspension or expulsion from the University.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a Mav-

Mail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as lecture, seminar, or laboratory shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each students feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlingtons effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week unless specified in the class syllabus. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit; there are exits located east and west of this room. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Please fill the course info, read, sign and return this statement to the instructor. Thanks.

Statement of Ethics
Student Confirmation
(CSE_____, Spring [], Summer [], Fall [], Year of _____)

The following is an excerpt from the College of Engineering's statement on Ethics, Professionalism, and Con-duct of Engineering Students. The notes are modifications appropriate for Computer Science and Engineering courses. Read the statement carefully, sign it, and return it to your instructor. A copy of the original policy is available for examination in the Computer Science and Engineering office. Additional copies of this statement can be obtained from your instructor or the Computer Science and Engineering office.

Statement on Ethics, Professionalism, and Conduct of Engineering Students
College of Engineering, The University of Texas at Arlington

The College cannot and will not tolerate any form of academic dishonesty by its students. This includes, but is not limited to 1) cheating on examination, 2) plagiarism, or 3) collusion.

Definitions:
A. Cheating on an examination includes:
1. Copying from another's paper, any means of communication with another during an examination, giving aid to or receiving aid from another during an examination;
2. Using any material during an examination that is unauthorized by the proctor;
3. Taking or attempting to take an examination for another student or allowing another student to take or attempt to take an examination for oneself.
4. Using, obtaining, or attempting to obtain by any means the whole or any part of an unadministered examination.
B. Plagiarism is the unacknowledged incorporation of another's work into work which the student offers for credit.
C. Collusion is the unauthorized collaboration of another in preparing work that a student offers for credit.
D. Other types of academic dishonesty include using other student's printouts from the ACS labs or students' disk, etc.

Notes:
1. The use of the source code of another person's program, even temporarily, is considered plagiarism.
2. Allowing another person to use your source code, even temporarily, is considered collusion.
3. In this class, the specific exceptions given below are not considered scholastically dishonest acts:
A. Discussion of the algorithm and general programming techniques used to solve a problem
B. Giving and receiving aid in debugging
C. Discussion and comparison of program output
4. The penalty assessed for cheating on a given assignment will be twice the weight of the assignment and will include notification of the proper authorities as stipulated in the UTA Handbook of Operating Procedures and on the web at http://www2.uta.edu/discipline
5. You may be entitled to know what information UT Arlington (UTA) collects concerning you. You may review and have UTA correct this information according to procedures set forth in UT System BPM #32. The law is found in sections 552.021, 552.023 and 559.004 of the Texas Government Code.

I have read and I understand the above statement.

Student's signature:_____

Student's name (printed):_____

Student's ID number:_____