

CSSE 374 Software Architecture & Design 1: Introduction



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Agenda

- **Introductions**
- **Software Design - What is it?**
- **Guidelines and Expectations**
- **Semester Schedule**
- **Course Outcomes and Related Goals**
- **Homework Assignments**

So, what is Design?

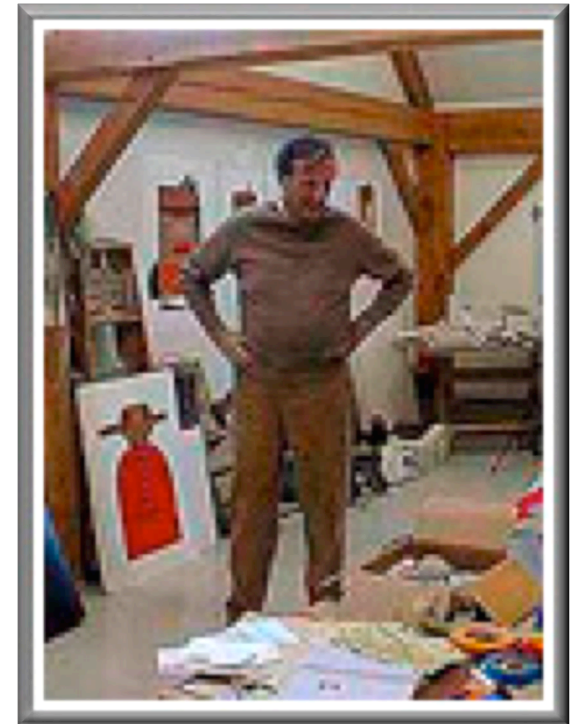
- Art?
 - Engineering?
 - Mix of the both?
-
- Think for 15 seconds...
 - Turn to a neighbor and discuss it for a minute



Is Design **Creative** like Artists?

“Design is directed toward human beings. To design is to solve human problems by identifying them and executing the best solution.”

Ivan Chermayeff



Is Design what Innovators do?

“In most people's vocabularies, design means veneer. It's interior decorating. It's the fabric of the curtains, of the sofa. But to me, nothing could be further from the meaning of design.

Design is the fundamental **soul** of a human-made creation that ends up expressing itself in **successive outer layers of the product** or service.”



Steve Jobs



Is Design what Architects do?

Some architects have a preconceived notion of what a building should be — they design from the outside like the building is a piece of sculpture. I prefer to patiently search through **extensive discovery** until I find a seam somewhere, crack it open and discover the art inside of the process.

Curtis W. Fentress

Software Design Perspective

"There are two ways of constructing a software design: One way is to make it so simple that there are obviously no deficiencies, and the other way is to make it so complicated that there are no obvious deficiencies. The first method is far more difficult."

-C.A.R. Hoare



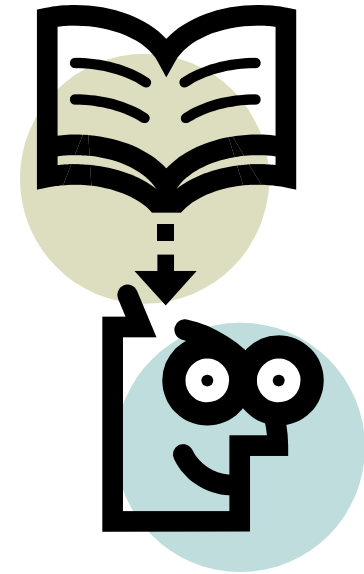
Engineering Design – Simple Definition

- “Design” specifies the strategy of “how” the Requirements will be implemented
- Design is both a “Process” and an “Artifact”



Where do Designs Come From?

- Intuition/Evolution
- Adoption
- Engineering



**“Design” is to “coding”
as _____ is/are to _____?**

- **Again, think for 15 seconds...**
- **Turn to a neighbor and discuss it for a minute**



Learning Outcomes: Teamwork

Work effectively with a team of software project stakeholders, including customers and members of the development team.



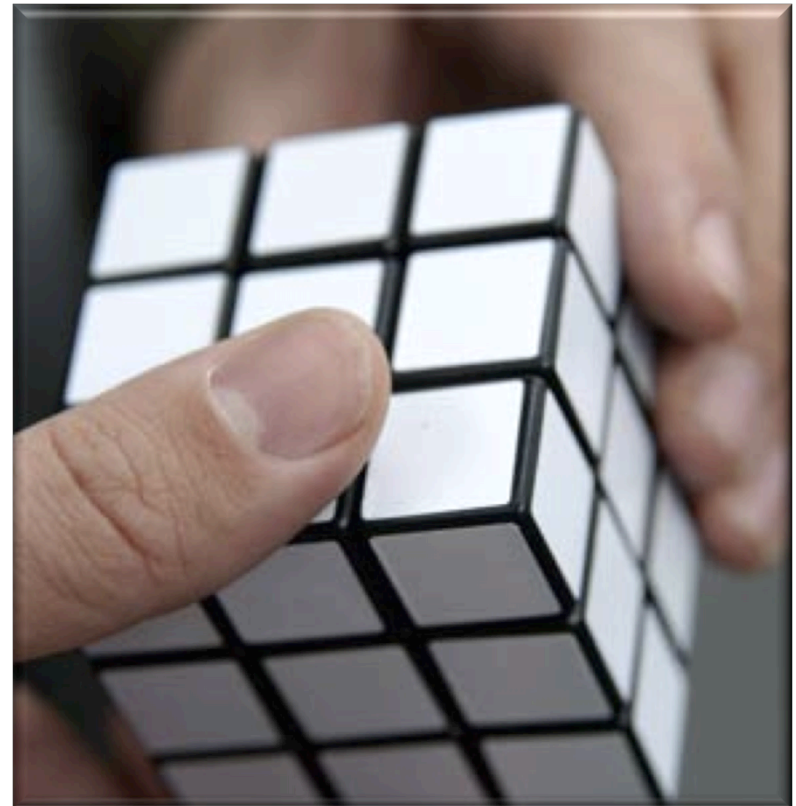
Learning Outcomes: Object-Oriented Design

Demonstrate object-oriented design basics like domain models, class diagrams, and interaction (sequence and communication) diagrams.



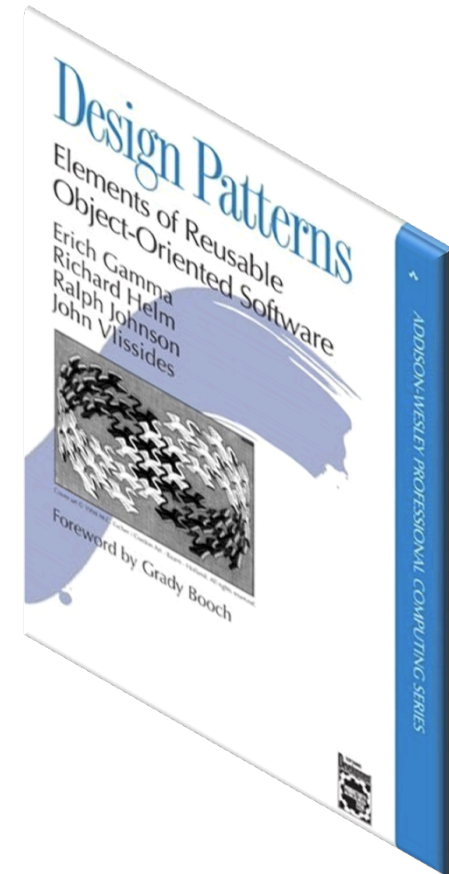
Learning Outcomes: Problems and Solutions

Recognize the differences between problems and solutions and deal with their interactions.



Learning Outcomes: Fundamental Design

Use fundamental design principles, methods, patterns and strategies in the creation of a software system and its supporting documents.



<http://www.amazon.com/Design-Patterns-Elements-Reusable-Object-Oriented/dp/0201633612>

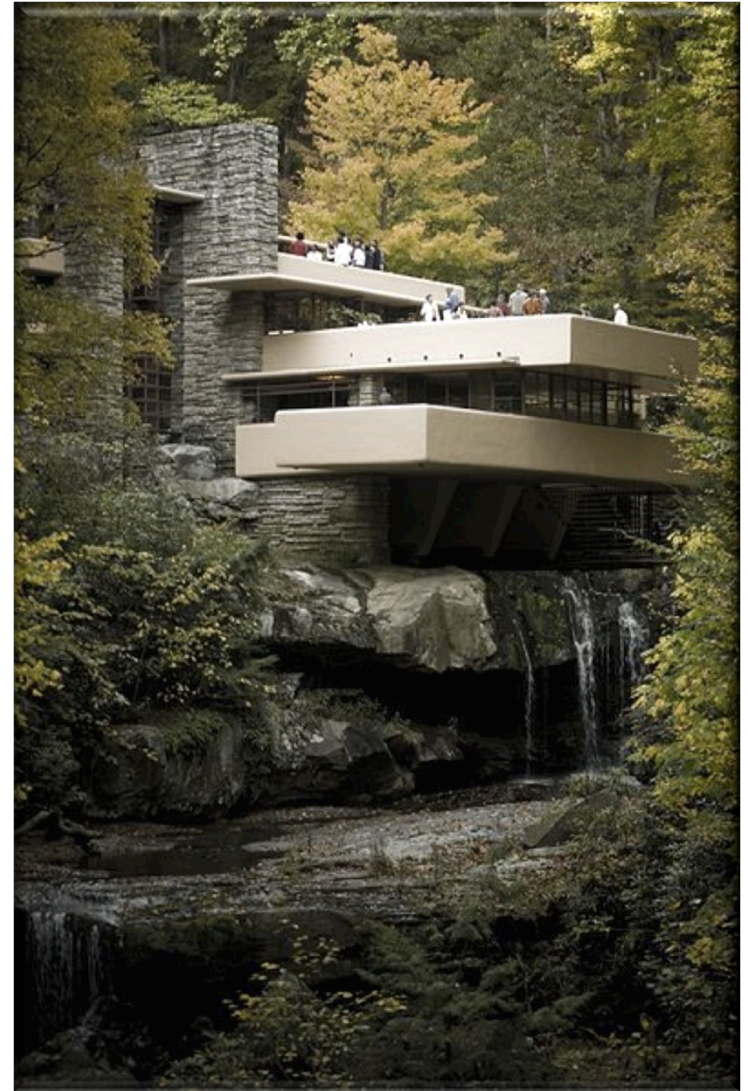
Learning Outcomes: Patterns, Tradeoffs

Identify criteria for the design of a software system and select patterns, create frameworks, and partition software to satisfy the inherent tradeoffs.



Learning Outcomes: Analysis of Design

Analyze and explain the feasibility and soundness of a software design.

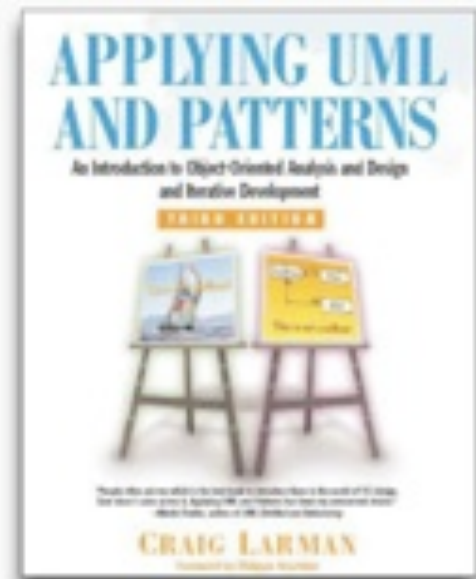


Course Textbook and Readings

■ Required Textbook

- Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development (3ed)”
- by Craig Larman
Printice Hall PTR (2004)
- ISBN-13: 978-0131489066

- Readings will be also be assigned from relevant papers





Course Mechanics

- **Taught in 2 Sections (1st and 7th periods)**
 - **Class meetings: Monday, Tuesday, & Thursday**
 - **Project Team Meetings: Friday**
- **Find most material:**
<http://www.rose-hulman.edu/class/csse/csse374-201120-02/>
- **Grades and Drop boxes will be on Angel**
- **Daily Quizzes**



Guidelines and Expectations

- **Demanding Course:** 8+ hours/week outside of class
- Read the assigned material before class
- Check Rose email & Angel course website daily
- Participation – Teams and Class activities
 - You will be working in teams on some assignments
 - Be fair to your team members...they will be evaluating you!
- Be mindful of the CSSE Honesty Policy
- Electronic Distraction Policy



Grading and Evaluation

- **35% Theory**
 - Examination(s) (30%)
 - Quizzes/Discussion (5%)
- **65% Practicum**
 - Homework (20%),
 - Junior Project Deliverables (35%)
 - Weekly Project Meetings/Participation (10%)

Grade Scale

The usual point scale will apply (subject to curve).

Statute of Limitations

Any questions (or concerns) about the evaluation of an assignment must be raised within two weeks of the posting of score information.

Rewarding Contributions

- **Fairness Principle**

- Reward extraordinary contributions
- Discourage freeloading

- **Mechanism: Performance Evaluations**

	Fred	Dino	BamB
Fred	8 10	8	8
Dino	8	9	8
BamBam	7	10	8
Individual Avg.	7.67	9	8
Team Avg.	8.22	8.22	8.22
Raw Weight	93%	109%	97%
Clamped Weight	93%	105%	100%

Late Work



- Legitimate reasons for late work,
 - Must be acknowledged before due date

- Late buffer of 3 assignments
 - Can spend 1 on any non-project assignment
 - Can earn 1 per assignment
 - Use survey on **ANGEL** before the assignment deadline to spend/earn late days

Deadlines

- Deadlines temperamental beasts,
... you hug one too close and it's liable bite you!

Tentative Winter Quarter Timeline

Class
Begins
Intro.
OOA/D

Sys. Seq.
Diagrams

Logical
Arch. &
Obj. Design

Class
Diagrams

Mapping
Design to
Code

Exam 1
1/13

GoF
Design
Patterns

Activity
Diagrams

Package
Design

More
Design
Patterns

Final
Exam
(TBD)

Dec

Jan

Feb

Domain
Models

Operation
Contracts

Interaction
Diagrams

Intro. to
GRASP

Objects w/
Respons-
ibilities

DM Analysis
Refinement

Architecture

Deployment
& Components

*10 weeks, 40 sessions...
So much to do and so little time...*



Homework Assignment for 11/30/10

- **Read Chapters 1, 3, & 8 in text**
- **Establish Time for Weekly Team meetings on Fridays**
- **Help me get to know you...**
 - Complete CSSE 374 Student Survey on Angel**
 - Lessons/Surveys/CSSE_374_Student_Survey**
 - Quiz grade**
 - Due Tomorrow (11/30/10) by 5:00pm**