



Software Design & Architecture

Reid Holmes

Lecture Summary

Administrivia

Expectations

Quick Assignment

Discussion

Dates and Times

Lectures in MC 1056 T/Th @ 1600 - 1720

Will be interactive

I will be available before but not after

Tutorials in DC 3351, F @ 1400 - 1450

Will not run every week

Friday's schedule will be announced Tuesday

When not a tutorial, TAs will hold office hours

Directory

- ▶ **Instructor:** Dr. Reid Holmes

Office: DC 3351 (by appointment)

Email: rth.se2@gmail (ensures best response)

TA: Kevin Shelley

Office: DC 3334 (by appointment)

Email: karshell@cs.uwaterloo

TA: Wei Wang

Office: DC 3334 (by appointment)

Email: w65wang@cs.uwaterloo

IMPORTANT: Please do not leave your messages to the last minute or expect a response time of less than 24h.

Key Information Source

<http://www.cs.uwaterloo.ca/~rtholmes/>

<http://twitter.com/cs446>

Renders on your mobile device

Updated within 24h of class

Slide Availability

I will mostly work on the chalk boards

Slides will be available online

Slides will be posted (just) before class

Slides will be incomplete, lectures fill in the gaps

Slides may be updated after class

The notes **cannot** take the place of the lectures

Textbooks

- ▶ **No** textbooks are required
- ▶ These may be **helpful**:
 - ▶ Software Architecture: Foundations, Theory, and Practice
 - ▶ Essential Software Architecture
 - ▶ Freely available to students in digital form
 - ▶ Design of Design
 - ▶ Mythical Man Month
- ▶ Links are provided on the web page along with slides for SA and ESA

Class Survey

XXX total students

XXX want to be here

XXX have taken SE1 (CS 445) [XXX will take in future]

XXX have taken SE3 (CS 447) [XXX will take in future]

XXX are in coop

XXX have worked in industry

XXX have encountered design

XXX have encountered architecture

XXX want to design and build software as a career

XXX are graduating this year

Intended Learning Outcomes

By the end of the course you should be able to:

Critique an existing architecture or design.

Differentiate how various architectural styles and design patterns enhance and degrade a system's functional-and non-functional properties.

Generate and **justify** an architecture and/or design given a collection of requirements.

Produce and **present** concise and unambiguous architecture and design descriptions.

Create and **implement** an architecture and design, refining it into a complete system.

My Expectations

Be professional

questions in class, email, interacting with TAs

Attend lectures and tutorials

talk to class or team mates if you are away

Participate

discussions, activities, tutorials
contributing to your group

Your Expectations?

Project (Tablet apps)

- ▶ Goal:
 - ▶ To make something *useful*
 - ▶ To learn something *new*
 - ▶ To leverage current *technology*
 - ▶ To have ***fun***
- ▶ Constraints:
 - ▶ GWT (quick intro [video](#))
 - ▶ Work on at least two mobile platforms
 - ▶ Be useful, novel, and leverage technology

Project

- ▶ Will be completed in teams of three or four
- ▶ Select your own teams
- ▶ One team member must email me your:
 - ▶ The names of your teammates
 - ▶ Due 0800 Thursday
- ▶ If you do not have a team by Thursday or your team is too small, we will sort it out in class Thursday

Academic Integrity

collaboration vs. plagiarism

collaboration vs. cheating

This is **important**. The project will have **team** and **individual** components.

Deliverables

- ▶ Deliverable 0: Arch/design impressions
- ▶ Deliverable 1: Project proposal
- ▶ Deliverable 2: Project architecture & design goals
- ▶ Deliverable 3: Project prototype demonstration
- ▶ Deliverable 4: Project architecture & design
- ▶ Deliverable 5: Project implementation
- ▶ Deliverable 6: Project presentation
- ▶ Deliverable 7: Project technical tutorial

Schedule

- ▶ Proposal: Sept 20 @ 0800
- ▶ Arch & design properties: Oct 13 @ 0800
- ▶ Prototype demo: Oct 25 In Class
- ▶ Mid-Term: Nov 1 In Class
- ▶ Arch & design: Nov 10 @ 0800
- ▶ Source code: Nov 29 @ 0800
- ▶ Presentations: Nov 29 / Dec 1 In Class
- ▶ Deliverable 7: Dec 5 @ 0800 (or anytime before)
- ▶ Final: TBD by the registrar (find out ~Oct 19)

Assessment

- ▶ Project deliverables 60%
 - ▶ Mid-term 10%
 - ▶ Final Exam 30%
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- ▶ Some project deliverables will be pass/fail
 - ▶ MUST pass final exam and ALL pass/fail elements

**Is CS Grad Studies @
Waterloo for you?**
Come find out! Get some food.

CS Grad Studies Info Session

Wed., Sept. 21st, 12 - 1 pm, DC 1302

UNIVERSITY OF
WATERLOO

uwaterloo.ca

**New! Master of Health
Informatics Info Session**

Wed., Oct. 5th, 12 - 1 pm, DC 1304

Deliverable 0

- ▶ Write, or send me a two paragraph email:
 - ▶ First paragraph:
 - ▶ Your name and a high level overview of development experience. Include a sentence about what you would like from this course.
 - ▶ Second paragraph:
 - ▶ A description of how you have encountered “architecture” and/or “design” in your experience.
- ▶ Due in 15 minutes; deliverable is Pass/Fail
- ▶ Have a stretch; discussion after completion

Arch / Design Discussion



Upcoming Deadlines

- ▶ Form project groups
 - ▶ Send to rth.se2@gmail by **0800 Sept 15:**
 - ▶ Team member names, quest id's, student #s
 - ▶ This is important
- ▶ Deliverable #1: Project proposal
 - ▶ Send to rth.se2@gmail by **0800 Sept 20**
 - ▶ Short presentation in class
 - ▶ Pass/Fail but bonus marks available
 - ▶ Start thinking about this now!