Software Design & Architecture
Reid Holmes
Lecture Summary

Administrivia
Expectations
Project
Quick Assignment
Discussion
Dates and Times

Lectures in MC 4060 T/Th @ 1130 - 1250

I will be available after but not before

Classes will often comprise of a video portion that you are to watch in advance; in-class time will be spent on collaborative design activities.

The video material will not be reviewed and will be integral to the activity.

Tutorials will _NOT_ be held this year

Office Hours will be by appointment
Why flip?

Looking back at past course feedback, the number one student request was for the course to be more concrete.
Directory

- **Instructor**: Dr. Reid Holmes
  - Office: DC 3351 (by appointment)
  - Email: rth.se2@gmail (ensures best response)

**TA**: Laura Inozemtseva
- Office: DC 3334 (by appointment)
- Email: lminozem@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
Slide/Video Availability

I will mostly work on the chalk boards

Slides and video will be available online

- The course web page will be updated by EOD Friday for the next week’s lecture
- The slides will not be heavy on concrete examples as these will be covered in class.
- In-class activities will not be posted.

The slides/videos 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
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 and 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

talk to class or team mates if you are away

Participate

during discussions, activities, group project
Your Expectations?
Project

- Will be completed in teams of four
- Select your own teams
- One team member must email me your:
  - The names of your teammates
  - Due 0800 Jan 14 via email
- If you do not have a team by Jan 14 or your team is too small, we will sort it out in class
  - (you _will_ be assigned to a team, so please try to find one yourself/fill up your team)
Project (Mobile Apps)

- **Goal:**
  - To make something *useful*
  - To learn something *new*
  - To leverage current *technology*
  - To have *fun*

- **Constraints:**
  - Be useful, novel, and leverage technology
  - Cannot require crowd involvement
Project (Mobile Apps)

- **Goal:**
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  - **MUST** work on more than one platform
Cross-platform

- Must be demoed on two or more of the following platforms:
  - iOS
  - Android
  - BB10
  - WP8
  - FirefoxOS

- App should conform to the platform (e.g., support hardware back button if available while hiding on-screen navigation controls).

- Integrate with appropriate platform services
RendezVous

Set Location
Set Image
Set Alarm
Start
Reset

Distance: 1.2km
Time: 15min
Level: MF

Show Picture
Finish
CS Advisor Appointment System
Team Legendary Apps
Point

Mark locations

- https://www.youtube.com/watch?v=Qxg3vLJY74M
Of Course!

https://www.youtube.com/watch?v=3Uzf6KiEMnE
Demention

- https://www.youtube.com/watch?v=DqT9uCcfKQA
Deliverables

- Deliverable 0: Background
- Deliverable 1: Project proposal
- Deliverable 2: Proposal presentations (5%)
- Deliverable 3: Prototype demo (5%)
- **Deliverable 4: Project arch + design (30%)**
- Deliverable 5: Project presentations (10%)
- Deliverable 6: Participation journal
Schedule

- Proposal: Jan 23 @ 0800
  - Presentation: Jan 28

- Prototype demo: Mar 4/6 in class

- Architecture + design: Mar 17 @ 0800
  - 1 hour Oral exams that week

- Presentations: Mar 31 @ 0800
  - 15 minute presentation in class Apr 1/3
Assessment

- Project deliverables  60%
  - + 2% best proposal
  - +2% best prototype demo
  - +2% best final demo
  - +2% accepted to curated app store
- Final Exam  40%

- Some project deliverables will be pass/fail
- MUST pass final exam and ALL pass/fail elements
Project Scaling

- Project deliverables: 60%

\[(\text{project} + \text{bonus}) \times \text{scale}\]

= final project grade

- Scale will range between 0.75 and 1.0 (25 points)
  - 5: completeness (compared to proposal)
  - 5: utility
  - 5: polish
  - 10: difficulty
Academic Integrity

collaboration vs. plagiarism

collaboration vs. cheating

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

- Form project groups
  - Send to rth.se2@gmail by 0800 Jan 14:
    - Team member names, quest id’s, student #s
    - This is important
- Deliverable #1: Project proposal
  - Send to rth.se2@gmail by 0800 Jan 23
  - Short presentation in class
  - Pass/Fail but bonus marks available
  - Start thinking about this now!