Software Design & Architecture

Mei Nagappan

(material adapted from Reid Holmes)
Lecture Summary

- Administrative details
- Expectations
- Project
- Assessment
Dates and Times

Lectures in DWE 3522 T/Th @ 1600 - 1720
   I will be available for a few minutes before and after.

Tutorials will _NOT_ be held this year

Office Hours will be by appointment at DC 3349

TA Office Hours:
Ivens: Mon 1500 - 1600 (DC 2517)
Aaron: Wed 1100 - 1200 (DC 3334)
Cassiano: By appointment for Android dev questions (DC 3334)
Directory

- **Instructor**: Dr. Mei Nagappan (Prof. Mei)
  - Office: DC 3349 (by appointment)
  - Email: mei.nagappan@uwaterloo.ca

- **TA**: Aaron Sarson
  - Email: asarson@uwaterloo.ca

- **TA**: Ivens Portugal
  - Email: iportugal@uwaterloo.ca

- **TA**: Cassiano Monteiro
  - Email: cassiano.monteiro@uwaterloo.ca

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

https://learn.uwaterloo.ca/d2l/home/362279

https://cs.uwaterloo.ca/~m2nagapp/courses/CS446/1181/
Slide Availability

Slides are available online

- The course web page will be updated before class with latest set of slides.
- 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 **cannot** take the place of the lectures.

You will need to attend the architecture and design activity classes to know the material as there will be a discussion on each.
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 three and some cases four
- Select your own teams
- One team member must email me and the TAs:
  - The names of your teammates
  - The GitHub repo for the project.
  - Due Noon Jan 11 via email
- If you do not have a team by Jan 11 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
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
- **MUST** work on Android
Connoisseur
Projects from the Past
Deliverables

- Deliverable 0: Team and GitHub repo
- Deliverable 1: Project proposal (5%)
- Deliverable 2: Proposal presentations (Pass/Fail)
- Deliverable 3: Prototype document (5%)
- Deliverable 3: Prototype demo (Pass/Fail)
- Deliverable 5: Project arch + design document (10%)
- Deliverable 5: Project arch + design oral exam (10%)
- Deliverable 6: Project presentations (5%)
- Deliverable 6: Participation journal (5%)
Schedule
Assessment

- Project deliverables 40%
  - +2% best proposal
  - +2% best prototype demo
  - +2% best final demo
  - +2% accepted to curated app store
- Arch/Design activity 10%
- Final Exam 50%
- Some project deliverables will be pass/fail
- MUST pass final exam and ALL pass/fail elements
Project Scaling

- Project deliverables: 40%

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

  = final project grade

- Scale will range between 0.50 and 1.0 (25 points)
  
  - 10: completeness (compared to proposal)
  - 10: utility
  - 10: polish
  - 10: difficulty
  - 10: pivot
Academic Integrity

collaboration vs. plagiarism
collaboration vs. cheating

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