Software Design & Architecture

Reid Holmes

Monday, Jan 7, 2013

Lecture Summary

Administrivia

Expectations

Quick Assignment

Discussion

Dates and Times

Lectures in MC 4041 MWF @ 0830 - 0920

Will be interactive

I will be available after but not before

Lectures on Wednesday will often be design activities; these will be good exam practice

Tutorials will _NOT_ be held this year

Office Hours will be by appointment

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

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

36 total students

32 want to be here

6 have taken/will take SE1 (CS 445)

10 have taken/will take SE3 (CS 447)

26 are in coop

10 have worked in industry (outside of coop)

   15 have encountered design

   6 have encountered architecture

6 want to design and build software as a career

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 and tutorials

talk to class or team mates if you are away

Participate

discussions, activities, tutorials

contributing to your group

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 Wednesday

- If you do not have a team by Wednesday or your team is too small, we will sort it out in class

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

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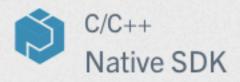　‣ Cannot require crowd involvement

　‣ BB10 Webworks or BB10 Native/Cascades

C/C++
Native SDK

Use your existing C/C++ skills to port an existing title to PlayBook and BB10 or create a brand new astonishing Cascades application for BlackBerry 10.

» View your Native options

BB10

HTML5
WebWorks

Use your existing JavaScript/CSS/HTML skills to bring your app to existing smartphone, PlayBook and future BB10 users. Deeply integrate with core BlackBerry functionality.

» Go to the WebWorks site

BB10

ActionScript
Adobe AIR

If you have an existing game or app written in AIR that you are looking to bring to the PlayBook and future BB10 platform this is the choice for you.

» Go to the Adobe AIR site

BB10

Java
Android Runtime

Port existing Android apps and games to PlayBook and BB10 and expand your market. Simply re-package and distribute through App World.

» Go to the Android Runtime site

BB10

Java
BlackBerry Java

Build deeply integrated and rich BlackBerry smartphone apps for over 75 million existing BlackBerry users. Integrate your app with the core user experience.

» Go to the Java site

Themes
Theme Studio

Build a personalized theme from scratch or use pre-set templates to guide you. Distribute your theme to over 75 million BlackBerry smartphone users.

» Go to the Themes site

Deliverables

‣ Deliverable 0: Arch/design impressions

‣ Deliverable 1: Project proposal + pitch

‣ **Deliverable 2: Project architecture (20%)**

‣ Deliverable 3: Prototype demo

‣ **Deliverable 4: Project design (20%)**

‣ Deliverable 5: Project implementation

‣ **Deliverable 6: Final demo (10%)**

‣ **Deliverable 7: Technical tutorial (10%)**

Schedule

‣ Proposal: Jan 18 @ 0800 (+pitch Jan 21)

‣ Architecture: Feb 11 @ 0800 (+sessions that week)

‣ Prototype demo: Feb 27 / Mar 1 - In class

‣ Design: Mar 25 @ 0800 (+sessions that week)

‣ Presentations: Mar 22 / 25 / 27 - In class

‣ Source code: Apr 5 @ 0800

‣ Technical Post: Apr 5 @ 0800

‣ Final: TBD by the registrar

Assessment

‣ Project deliverables   60%

‣ Final Exam   40%

‣ Some project deliverables will be pass/fail

‣ Architecture / Design will be a short written document + a session with myself and the TAs to quiz you on your decisions / assumptions

‣ MUST pass final exam and ALL pass/fail elements

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 9:

      ‣ Team member names, quest id's, student #s

      ‣ This is important

‣ Deliverable #1: Project proposal

   ‣ Send to rth.se2@gmail by 0800 Jan 18

   ‣ Short presentation in class

   ‣ Pass/Fail but bonus marks available

   ‣ Start thinking about this now!