

Objectives

- Course conclusions

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Review

- What did you learn this semester?

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1st Day: What This Course is About

- Web applications
 - Distributed computing
 - Web application technologies (server and client)
 - How to develop high-quality Web applications → full-stack development
 - Software tools
- Software engineering
 - Large development project
 - More software, collaboration tools
 - Emulate real-world experience with actual client
- Life-skills
 - Reading, writing, discussion, presentation

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What We've Done

- Client-Side
 - HTML5
 - CSS
 - JavaScript

 - A bit of Bootstrap, jQuery, ReactJS
- Server-Side:
 - Java Servlets
 - JavaServer Pages (JSPs)
 - Spring Frameworks (MVC, Data, Boot, ...)

 - A bit of JSTL/Thymeleaf, scaling applications

 - Relational databases, JDBC

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Software Engineering Skills

- Writing requirements documents
 - Anticipate needs, potential problems
- Design skills, agile development
 - Interface first
 - Rapid prototyping, static HTML mockup
 - Iteration - improves final product
 - Find problems early
 - Prioritizing functionality
 - Modifying requirements
- Detective/Debugging Skills
 - Lots of possible sources of errors
- Understanding/learning new code bases
 - Need to build on fundamentals
- Collaborating with team members
 - Version control, wiki, issue tracking
- Design patterns
 - MVC

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Git Flow Reminder

1. You should be working in a separate branch, not development branch
2. Branch
 - Develop, work, commit in that branch
3. Switch to development
4. Pull development
5. Merge your branch into development
 - Test; check for issues/bugs
6. Push

<https://www.atlassian.com/git/tutorials/comparing-workflows/gitflow-workflow>

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Tools

- Eclipse Web Tools Platform
- Browser Tools
 - [WebDeveloper](#) – HTML, CSS, JavaScript
- Version Control
 - [Git](#)
- Maven – build automation
 - [Dependency management](#)
 - [Packaging a war](#)
- Wiki

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Content We Didn't Cover

- Testing
- Security (more)
- JSTL
- Ajax
- Web application infrastructure/deployment
 - [System configuration](#)
- Software development processes (Scrum, Kanban)



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Frameworks

- Your status: know the Java-based Web fundamentals
 - Servlets – foundation, JSPs
 - Understand MVC breakdown
- Java Frameworks, typically MVC-based
 - JavaServer Faces (JSF)
 - Apache Struts
 - Grails
 - Blade
 - Google Web Toolkit
 - Java → JavaScript
 - Apache Wicket

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Other Web Frameworks/Languages

- **ASP:** *Active Server Pages*
 - Microsoft, VB Script, built on .NET
- **CGI:** Common Gateway Interface
 - Typically implemented in C or Perl
- **Django:** MVC Python-based Web Framework
 - Altered form in Google App Engine
- **Node.js:** JavaScript outside of the browser
- **PHP:** *PHP: Hypertext Preprocessor*
 - Easy, runs on Apache web server, but security holes
 - Our Wiki uses PHP
- **Ruby on Rails:** Ruby-based MVC Web Framework

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Web Services, Service-Oriented Architecture

- Machine to machine communication
 - Rather than human to machine
- Services are loosely coupled
- WSDL: Web Services Description Language
 - Well-defined interface



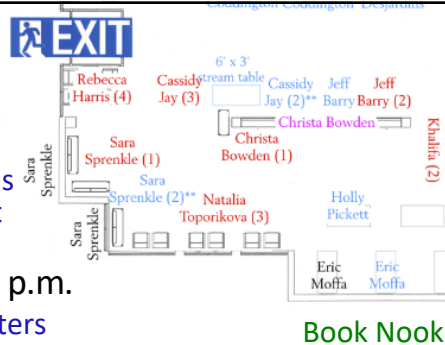
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Spring Term Festival

- Git push deadline: 10 a.m.
 - Be ready for emailed questions from me if application doesn't work on server
- Library First Floor: 12 p.m. – 2 p.m.
 - Supplies: laptop, poster, adapters
 - Anything else?
- View the applications
 - <http://agp-dev1.ad.wlu.edu/Graffiti/>
 - <https://chemtutor-dev.ad.wlu.edu:8443/chemtutorial/>
- Practice demo
 - What do people want to see?
 - What do people care about?



Show poster

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TODO: Project

- Demo
 - 12-2 p.m. in library
 - Bring laptops or other way to present
- Documentation, analysis: Saturday, 5 p.m.
- Final implementation deadline: Saturday, 5 p.m.
 - Test each other's code – problems will come up
 - No errors in project
 - Make consistent in look, feel, URL naming
 - Clean up code
 - Remove debugging statements
 - Good names

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TODO: Course Evaluations

- On Sakai – email about them today at 3:30 p.m.
- By Saturday at 5 p.m.
- 1% extra credit on labs for 60% submission rate
 - Additional 1% extra credit for each additional 10% submitted

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Today's Plan

- This morning
 - Feedback from me
 - Collaborate with teammates
 - Look/feel consistency
 - Focus on integration between subprojects
 - Test each other's code – pull code and make sure it works
 - Code should not have errors or warnings
 - There are some exceptions
- This afternoon
 - Consult with me
 - Continue working with teammates