Objectives: Project

- Project requirements for course

Time for the Computer Science…

- Software engineering
  - Design, development, implementation in cycles
  - Feedback from client
  - Collaborative software tools

Planning Stage

- Gather requirements of application
  - What is the application's functionality
  - What must it do and what would client like it to do?
  - What are the client's priorities?
  - **Clarify as much as possible!**
- Analyze requirements
  - Is it possible? Within the time frame?
  - If there are multiple ways to implement something, which should you do?
  - Anticipate difficulties (technology, implementation, …)

Planning Stage

- Write out requirements
  - Get rid of any ambiguities as soon as possible
  - Know **all** functionality, behavior
    - Required input/output
  - Clarify as much as possible
    - Otherwise, disputes with client
- Develop Work Plan
  - Steps to complete task
  - High-level, on Course Web Page
  - Drill down: divide up responsibilities

Project Overview

- Think about what needs to be clarified
  - What can the application do?
  - What do you need to know to make the UI, the backend?
  - Any hidden assumptions?
- Discussion in a bit…

Approaches to Software Design

- Inside-out
  - Develop a system
  - Add an interface
- Outside-in
  - Develop the interface
  - Then build the system to support it
- When design decisions are made, either the developer must conform to the user or the user must conform to the developer.

Approaches to Software Design

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Traditional CS Courses are almost entirely inside-out

Modern systems need to be designed outside-in to be effective.

Web sites especially need to be *usable*.

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Approaches to Software Design

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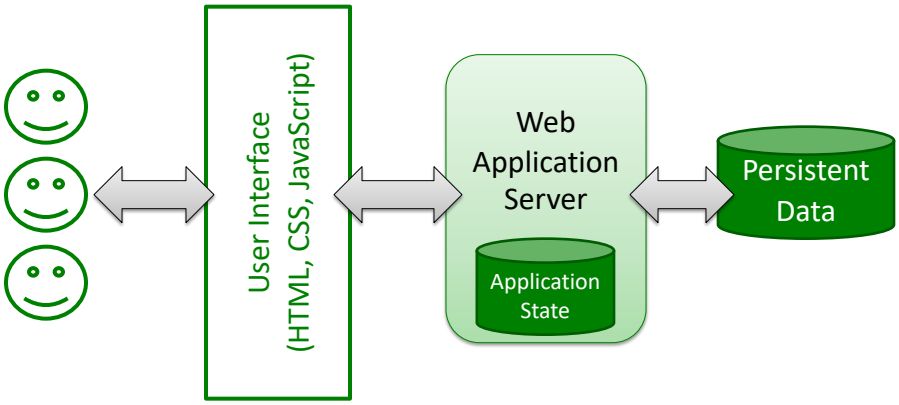
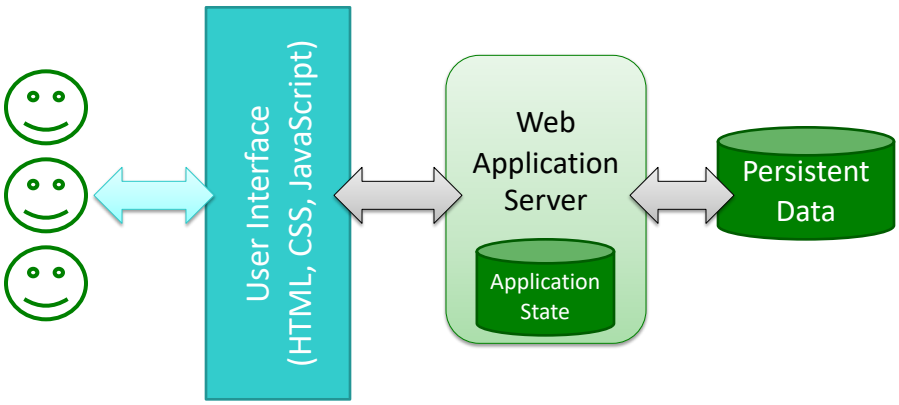
Our approach to the project

- When design decisions are made, either the developer must conform to the user or the user must conform to the developer.

Project Architecture



Project Architecture



Project Deliverables

- Deliverable 0: Project Requirements, Design, Work Plan
- Deliverable 1: Static HTML Mockup
  - Clarify flow, appropriate results
  - Feedback on presentation, usability
- Deliverable 2: Web application Implementation, I
  - High-priority functionality implemented
- Deliverable 3: Web application Implementation, Final
- Deliverable 4: Documentation
  - For users and for system administrator
- Deliverable 5: Demonstration
- Deliverable 6: Analysis

Spring Term Festival:
Last Friday of Term

Requirements, Design, and Work Plan

- Requirements
- Design: steps to complete project
  - Includes what will be implemented and the technologies used to implement each piece
- Work Plan: a tentative plan for what parts of the work each member is charged with doing
  - Prioritization of features

Requirements Gathering

- Clarification of requirements
- Involves asking lots of questions
- Talk through the application
  - Flow chart of what happens

Requirements Gathering: Questions

- What does the user want to do?
  - Go through a variety of *use cases*
    - Common case, error case
  - Part of your job is organizing these use cases
- What is needed to do that task?
  - User input? Saved data? Other sources?
- What does the user see?
  - Draw on whiteboard, use paper
  - What is interface?

Requirements on Wiki

- For each *feature*, you need to describe
  - The feature
  - The prerequisites – what needs to be true or to have happened before a user can use the feature
  - What a user sees (Be specific; e.g., are results in a particular order?)
  - What a user does on the page (Be specific)
    - Any input that needs to validated? Any constraints?
  - Example use cases - describe some typical situations of what a user can/will do
  - Relative priority of feature

See template

TODO

- Read overview of project on course web site
  - `http://www.cs.wlu.edu/~sprenkle/cs335/project.php`