CSE308

Requirements

Session Objectives

- Learn how to determine what to build
  - Requirements elicitation
  - Requirements analysis
  - Rapid prototyping
- Review techniques for requirements elicitation and requirements analysis
- Learn how to describe the system you are going to build
  - CASE tools
  - Prototypes

Project Teams

- Send an e-mail with your improved team name
- For now the names (and team members) are:

Need confirmation from:

1. Lawrence Chong
2. Liwen Fan
3. Samuel McKay

Team	Group
Aditya Balwani, Michelle Chan, Halaa Menasy, and Purav Shah	Aspen
Zhi Cao, Jintian Chen, Yongbin Chen, and Zewei Zhang	Birch
Brian Lee, Yiu Chau Lin, Yi Xie, and Yue Zhao	Cedar
Andrew Allhusen, Nolan Donoghue, Bridger Hahn, and Anthony Ria	Dogwood
Thomas Bundy, David Kang, Angelo Rizzuto, and Daniel Sha	Elm
Brandon Fieger, Paul Mannarino, Kevin Setayesh, and Kevin Young	Fir
Duan Hang Chen, Lawrence Chong, Hanyun Feng, and Marvin Yan	Ginkgo
Liwen Fan, Yinquan Hao, and Wenyuan Lei	Hemlock
Refath Hossan, Samuel McKay, William Murdy, and Joseph Sanossian	Ilex

Project Deliverables

- Your project will be developed in various stages
- Each stage will include one or more deliverables (e.g., documents, partial code, design diagrams)
- You will submit these items through a shared repository or your choice
- More details on the submission process and the repository once the TA has been assigned to the course

Overall Project Schedule

- Detailed schedule in class Web site
- Major milestones
  - 2/18-3/7 - Requirements documents
  - 3/11-3/25 - Design document
  - 3/21-3/23 - Design reviews
  - 3/28 - Final design document
  - 4/11-4/18 - Code reviews
  - 4/15-5/3 - Final demonstrations
  - 4/25-5/4 - Final demo

You will be developing your design (and some code) while you work on requirements

MIS Requirements Deliverables

- February 22
  - List of user roles
  - List of use cases
  - 5 complete use cases (text form)
  - Preliminary issues document
- March 1
  - Sample page look and feel
  - Prototype GUI for admins/downloads (if needed)
- March 5
  - Working user interface (html only)
- March 9
  - Final requirements document (including all use cases)

Requirements phase of your project is more straightforward than a typical IT project

MIS Requirements Document

- Title
- Related documents
- Project Overview (1-2 pages) - text summary of project
- Performance
- System
- Use cases
- GUI
  - Look and feel
  - Working prototype

The requirements document will become more complete and accurate as you learn more about the system

The working GUI prototype and the use cases are (by far) the most important part of this document

What are Requirements?

"You can't always get what you want
You can't always get what you want
But if you try sometimes well you might find
You get what you need"

Rolling Stones

- Sometimes (frequently?), your client will have a difficult time in stating the requirements
  - Limited understanding of real issues
  - Inability to comprehend the scope of a new system
  - Inconsistent views of system

Requirements Engineering ...

- Inception—ask a set of questions that establish ...
  - basic understanding of the problem
  - the people who want a solution
  - the nature of the solution that is desired, and

People usually think in terms of what they are doing now, not how to improve it

- Elicitation—elicit requirements from all stakeholders
- Elaboration—create an analysis model that identifies data, function and behavioral requirements

What are some data and behaviors of the project?

- Negotiation—agree on a deliverable system that is realistic for developers and customers (cost, performance, etc.)

Many times in Agile development, the customer works with the developers

... Requirements Engineering

- Specification—can be any one (or more) of the following:
  - A written document
  - A set of models
  - A formal mathematical model
  - A collection of user scenarios (use-cases)
  - A prototype

Your team should begin to prepare for an in-class requirements review - possibly Wednesday

- Validation—a review mechanism that looks for
  - errors in content or interpretation
  - areas where clarification may be required
  - missing information
  - inconsistencies (a major problem when large products or systems are engineered)
  - conflicting or unrealistic (unachievable) requirements.
- Requirements management (tools to trace requirements)

For very large systems

Requirements Analysis Techniques

- Interviewing
  - Structured versus unstructured interviews
- Questionnaires
- Forms analysis
- Focus groups (e.g., video capture)
- Scenarios (e.g., story boards)
- Rapid prototyping

Need to understand the application domain

Conduct team meetings

Frequently, the requirements analysis will be performed by analysts, not necessarily computer scientists

Know your limitations!

Discussion

- Volunteer team to articulate the requirements for
  - The project admin sub-system
  - The download sub-systems

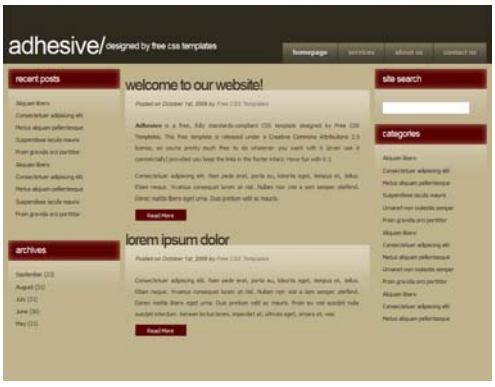
What are the roles in the project?

Categories of Requirements

- Functional - specifies an action that the system must be able to perform
  - Sometimes specified as inputs and outputs
- Nonfunctional
  - Platform constraints
  - Performance (e.g., response time, availability)

Look and Feel

- Your project should have a consistent style within a role
- For Web GUI, you can use a design template
- HTML design tools available



Bootstrap is very helpful in quickly building a good GUI

Prototypes

- Excellent technique to elicit requirements from users
- Users interact with the system, although none of the business logic (e.g., DB access) is operational
- Consists of
  - Project components (e.g., role views)
  - Look and feel
  - Interaction style
  - Access to data and results (simulated)

Decouple object access from DB access

You may need to fake an Ajax interaction with some JavaScript

Rapid Prototyping

- Advantages
  - Speed
  - No ambiguities, omissions, contradictions
- Disadvantages
  - Specification document is contract
  - Testing requires specifications
  - Maintenance requires specifications

Human Factors

- Client and intended users must interact with the user interface
- Human-computer interface (HCI)
- Human factors must be taken into account
  - Expertise level of interface
  - Consistency of interface style
  - Uniformity of appearance
- Rapid prototype of HCI advisable

Be sure to select users typical of each role

Reusing the Rapid Prototype

- Options
  - Extend the prototype - usually feasible with a Web interface
  - Discard the prototype
  - Reuse some of the prototype
- Use of different language or rapid prototype tool

Use of MVC is a huge advantage

Have You Satisfied the Objectives?

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