Agenda

Intro to Software Design

- Software Architecture
- Detail Design

Software Design

The process of building a program that:

1. Satisfies Functional Requirements
2. Does not violate the non-functional requirements

Architectural Design

This is the process of identifying and assigning responsibility for aspects of behavior to various modules and components of the software.

- How will components interact with each other
- Big Picture, High-Level view
- What, where, but not how
- Tradeoffs of trying to satisfy both functional and non-functional requirements
- Up front work, and impact the rest of the design.

Detail Design

This is the process of specifying the behaviour of each of the system components that were identified at the architectural stage.

- Deals with individual components
    - Data Structures
    - Algorithms
- The primary activity is analysis and design of the data structures and design of the algorithms

Design Algorithms

- Pseudo Code
- Structured Programming
- Flow charts, call graphs
- Decision tables

3 Elements of Design

1. Design Method: A systematic series of steps used to solve a problem.
2. Design Representation: Based on how we view the problem.
3. Design Validation
    a. Review by a team that isn't the design team
    b. Tools to do some checking
    c. Depends on design Methodology
    d. Should be ongoing compared to at the end

Model View Controller (MVC)

Originated in SmallTalk-80 as a way to build user interfaces.

Contains three types of objects

1. Model: the application object
2. View: the screen presentation
3. Controller: the way the UI reacts to user input

The power of MVC is that it decoupled these 3 components for greater flexibility.

- Views and models are decoupled via a subscribe and publish protocol
- A view must ensure that its appearance reflects the state of the model
- A model can notify all dependant views when the data has changed
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