Lecture 09: Software Architecture (Part I)

“Good software architecture makes the rest of the project easy.”
-- Steve McConnell

Outline

- Standard notations for expressing architectural designs
  - Dataflow / state diagram
  - Class diagram (upcoming)
  - Sequence diagram (upcoming)

Resources

- "Code Complete", 2nd ed., by Steve McConnell
  - Ch. 5: http://www.cc2e.com/docs/Chapter5-Design.pdf
- "Design Patterns Explained – A New Perspective on Object-Oriented Design", by Alan Shalloway and James Trott

The Basic Problem: Getting from Requirements to Code

How do you bridge the gap between requirements and code?

From Requirements to Code: One Possible Path

A Miracle Happens!

From Requirements to Code: A Better Organized Answer

Provide a high-level framework to build and evolve the system
An Architecture Helps with ...

- System understanding
- Reuse
- Construction
- Evolution
- Analysis
- Management
- Communication

level of abstraction, vocabulary, constraints
identifies commonalities
partial blueprint
organization for change, separates “what” from “how”
of components and connections
good milestone
between stakeholders

Notations: Dataflow / State Diagram

- High-level, coarse grained
- Used to describe interactions between the components of a system

Example: