

Design Patterns On-Ramp

An Introduction to Patterns

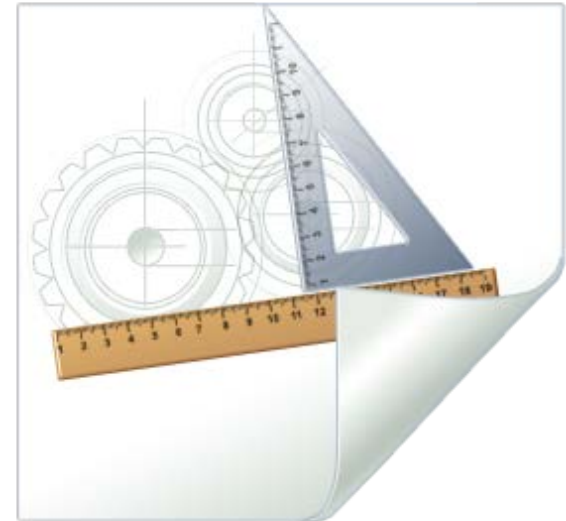
Jeremy Clark
www.jeremybytes.com
jeremy@jeremybytes.com



pluralsight 
hardcore developer training

Goals

- **Introduction to Design Patterns**
 - What are Design Patterns?
 - Who are the Gang of Four?
 - Why do Design Patterns Matter to Me?
- **Patterns You Already Use**
- **Other Useful Patterns**
- **Where to Go Next**

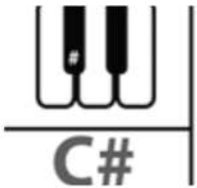


Design Patterns Library

A reference library for design patterns of all types

Pre-requisites

- **No experience with Design Patterns is necessary**
- **Basic understanding of C#**
 - Events
 - Exception Handling
 - Data Binding



C# Fundamentals - Part 1

This course is designed to give you everything you need to become a productive C# developer on the .NET platform

What are Design Patterns?

Each pattern describes a problem that occurs over and over again in our environment, and then describes the core of the solution to that problem, in such a way that you can use the solution a million times over, without ever doing it the same way twice.

-Christopher Alexander

Alexander, et al, *A Pattern Language*. Oxford University Press, 1977.

What are Design Patterns?

Each pattern describes

- **a problem which occurs over and over again**
in our environment,

Common Problems

- **Getting a notification when a process completes or a state changes.**
- **Making a complex API easier to work with.**
- **Adding functionality to an existing object.**
- **Behaving in distinct ways based on a current mode or state.**
- **Looping through elements of a collection or sequence.**

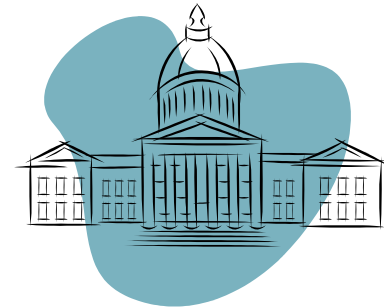
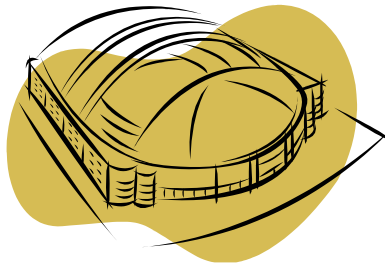
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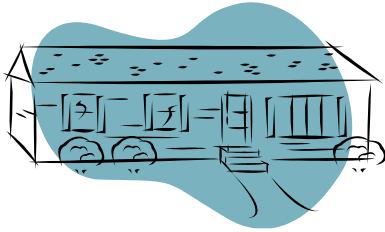
Architectural Patterns

Patterns for Covering a Space



Roof Patterns

Patterns for Pitched Roofs



Different Implementations

Combined Pyramid Roof and Gabled Roof



Core of the Solution

- **Is [insert programming implementation here] an example of the [insert pattern name here]?**
- **Example:**
Is event bubbling in WPF an example of the Chain of Responsibility Pattern?
Or is it an example of the Observer Pattern?

Parts of a Design Pattern

- **Pattern Name**

- Observer, Decorator, Repository, Model-View-Controller

- **Problem**

- How to make a complex API easier to use

- **Solution**

- Core elements and interactions

- **Consequences**

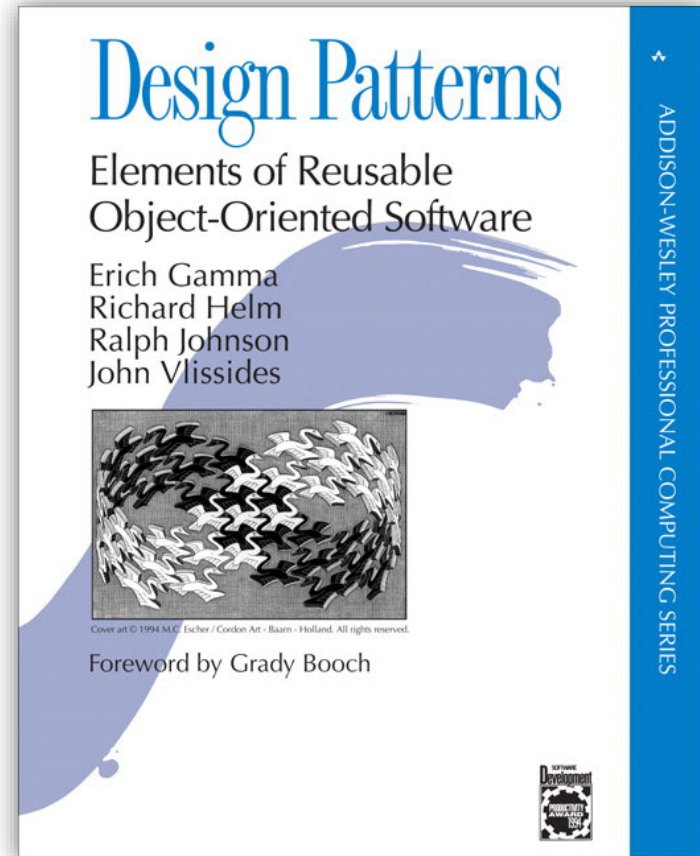
- Everything has a cost

Who are the Gang of Four (GoF)?

- **Erich Gamma**
- **Richard Helm**
- **Ralph Johnson**
- **John Vlissides**

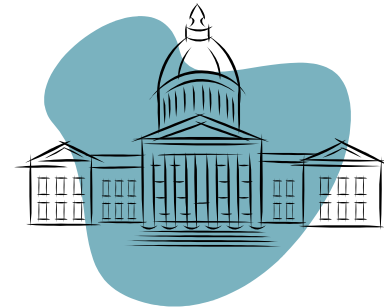
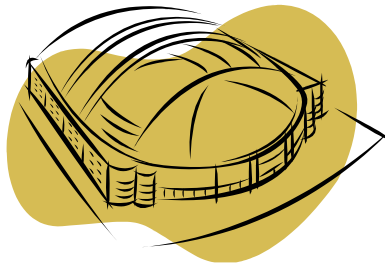
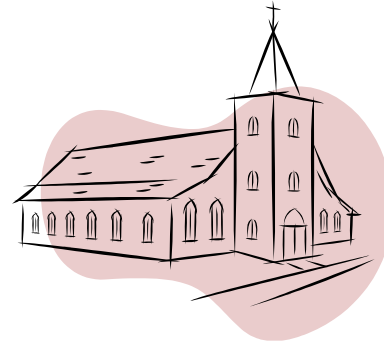
***Design Patterns:
Elements of Reusable
Object-Oriented Software***

ISBN: 978-0-201-63361-0



Architectural Patterns

Patterns for Covering a Space



Gang of Four Patterns

Creational Patterns

Abstract Factory
Builder
Factory Method
Prototype
Singleton

Structural Patterns

Adapter
Bridge
Composite
Decorator
Facade
Flyweight
Proxy

Behavioral Patterns

Chain of Responsibility
Command
Interpreter
Iterator
Mediator
Memento
Observer
State
Strategy
Template Method
Visitor

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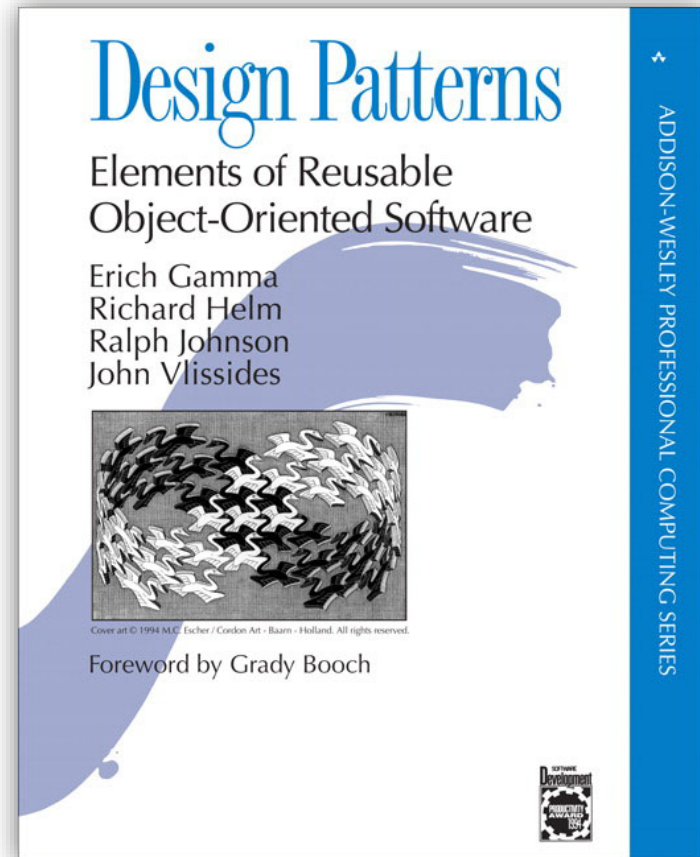
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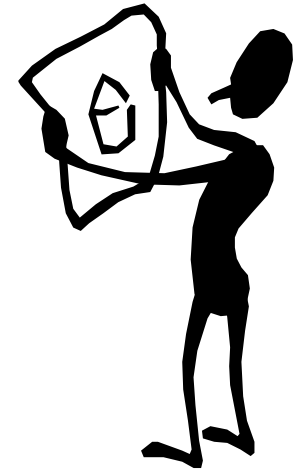
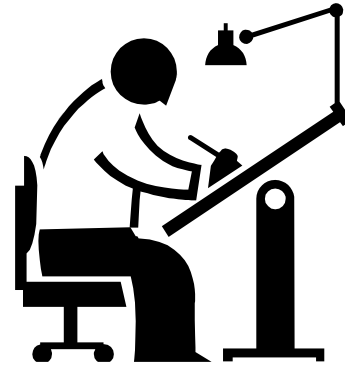
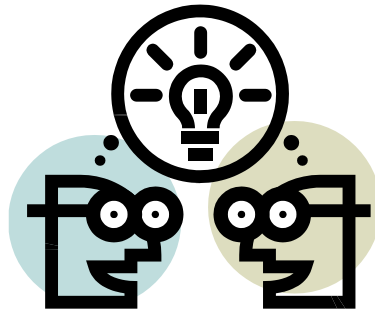
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Why Should We Care?

- **Well-Described Solutions**
- **Shared Vocabulary**
- **Concise Language**
- **Stay in Design Mode Longer**
- **Encourage Other Developers**



Summary

■ What are Design Patterns?

- Christopher Alexander

*Each pattern describes a problem that occurs over and over again in our environment, and then describes the **core of the solution** to that problem, in such a way that you can use the solution a million times over, without ever doing it the same way twice.*

- Parts
 - Pattern Name
 - Problem
 - Solution
 - Consequences

Summary

- **Who are the Gang of Four?**
- **Why Should We Care?**
 - Well-Described Solutions
 - Concise, Shared Vocabulary
 - Stay in Design Mode Longer
- **Next Up: Patterns You Already Use**
Observer and Proxy

