PRACTICAL PATTERNS FOR THE PROGRESSING PROGRAMMER

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- Co-Founder
  Alien Arc Technologies, LLC
- Co-Organizer of the Kansas City .NET User Group
- Wrote my first application when I was 10 years old and have been hooked ever since.
- Developing professionally since 1996
- Bought my GoF patterns book in 2004 (and it still looks like new)

WHAT IS A DESIGN PATTERN?

"Each pattern describes a problem which 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 this 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

DESIGN PATTERNS

What they are

- They deal with application and system design
- They are abstractions on top of code
- They deal with relationships
- They deal with problems that have already been solved

What they are not

- They are not language or environment specific
- They are not algorithms
- They are not a specific implementation

FOUR ESSENTIAL ELEMENTS

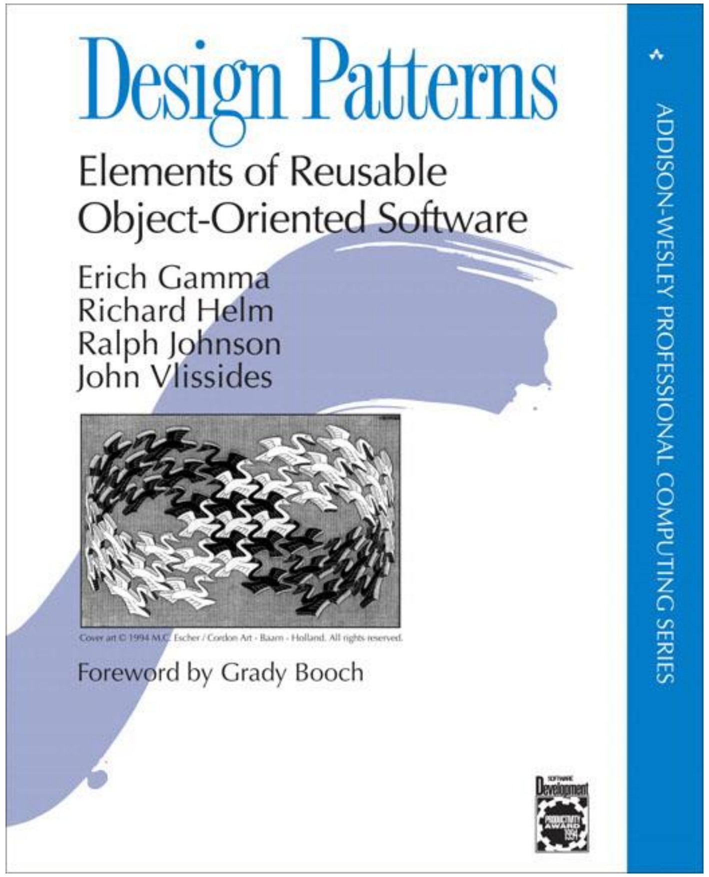
- Pattern Name
- Problem it tries to solve
- Solution
- Consequences

WHY SHOULD I CARE ?

- Common Vocabulary
- Keep from re-inventing the wheel
- Think about design and not get caught up in implementation details
- Provide a starting point for a solution
- Can speed up development in a team

WHO ARE THE GANG OF FOUR?

- Erich Gamma
- Richard Helm
- Ralph Johnson
- John Vlissides
- Written in 1994



Design Patterns

Elements of Reusable Object-Oriented Software

Erich Gamma
Richard Helm
Ralph Johnson
John Vlissides

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Foreword by Grady Booch

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CREATIONAL PATTERNS

- Abstract Factory
- Builder
- Factory Method
- Prototype
- Singleton

STRUCTURAL PATTERNS

- Adapter
- Bridge
- Composite
- Decorator
- Façade
- Flyweight
- Proxy
- Repository

BEHAVIORAL PATTERNS

- Chain of Responsibility
- Command
- Event Aggregator
- Interpreter
- Iterator
- Media
- Memento
- Null Object
- Observer
- State
- Strategy
- Template Method
- Visitor

DEMO TIME

REPOSITORY PATTERN

Mediates between the domain and data mapping layers using a collection-like interface for accessing domain objects.

Fowler, et al, Patterns of Enterprise Application Architecture, Addison Wesley 2003

DECORATOR PATTERN

Attach additional responsibilities to an object dynamically. Decorators provide a flexible alternative to subclassing for extending functionality.

Gamma, et al, *Design Patterns*. Addison-Wesley, 1994

FACTORY METHOD PATTERN

Define an interface for creating an object, but let subclasses decide which class to instantiate. Factory method lets a class defer instantiation to subclasses

Gamma, et al, *Design Patterns*. Addison-Wesley, 1994

OBSERVER PATTERN

Define a one-to-many dependency between objects so that when one object changes state, all its dependents are notified and updated automatically.

Gamma, et al, *Design Patterns*. Addison-Wesley, 1994

ANTI-PATTERNS

An **anti-pattern** (or **antipattern**) is a common response to a recurring problem that is usually ineffective and risks being highly counterproductive.

Common Anti-Patterns

- Architect Astronaut
- Cargo Cult Programming
- Big ball of mud
- God Object
- Poltergeists
- Magic Numbers/Strings
- Sequential Coupling

RESOURCES

Books

- Design Patterns (Gang of Four)
- Patterns of Enterprise Application Architecture – Martin Fowler
- Head First Design Patterns – Eric Freeman & Elisabeth Freeman

Blogs

- Martin Fowler – www.martinfowler.com
- Uncle Bob Martin – blog.cleancoder.com
- Dino Esposito – software2cents.wordpress.com

Pluralsight courses

- Design Patterns Library – Multiple authors
- Design Patterns On-Ramp – Jeremy Clark

THANK YOU

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About.me/brentstewart

Slides are available on my github site