DESIGN PRINCIPLES

Clean Code:
Principles, Patterns, and Practices for Better Code

KEEP IT SIMPLE, STUPID (KISS)

“KEEP IT SIMPLE STUPID”

by Kelly Johnson

http://blogs.smarter.com/blogs/Lego%20Brick.jpg

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THE POWER OF SIMPLICITY

Graphic by Nathan Sawaya
courtesy of brickartist.com

Graphic by Nathan Sawaya courtesy of brickartist.com

http://www.geekalerts.com/lego-iphone/

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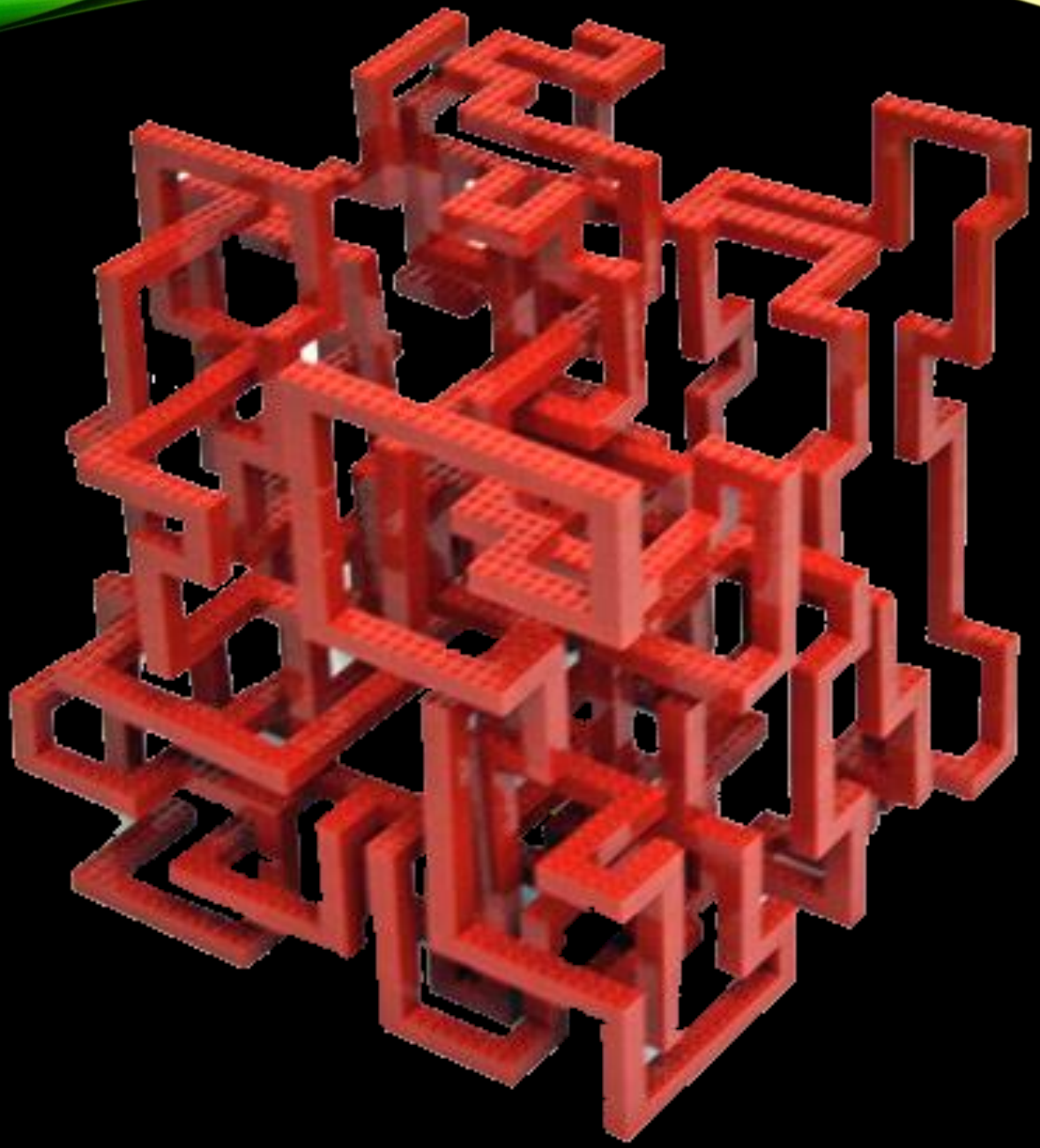

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Graphic by Nathan Sawaya courtesy of brickartist.com

DON’T REPEAT YOURSELF (DRY)

DON'T REPEAT YOURSELF (DRY)

by Andy Hunt and Dave Thomas in their book "The Pragmatic Programmer"

```
// Code Copy and Paste Method
public Class Person
 {
    public string FirstName { get;  set;}
    public string LastName { get; set;}

    public Person(Person person)
    {
        this.FirstName =
string.IsNullOrEmpty(person.FirstName)
                    ? string.Empty : (string)
person.FirstName.Clone();

        this.LastName =
string.IsNullOrEmpty(person.LastName)
                    ? string.Empty : (string)
person.LastName.Clone();
    }

    public object Clone()
    {
        return new Person(this);
    }
}
```

```
// DRY Method
public Class Person
 {
    public string FirstName { get;  set;}
    public string LastName { get; set;}

    public Person(Person person)
    {
        this.FirstName = person.FirstName.CloneSecured();
        this.LastName = person.LastName.CloneSecured();
    }

    public object Clone()
    {
        return new Person(this);
    }
}
```

```
public static class StringExtension
 {
    public static string CloneSecured(this string original)
    {
      return string.IsNullOrEmpty(original) ? string.Empty : (string)original.Clone();
    }
 }
```

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SEPARATION OF CONCERNS (SOC)

SINGLE RESPONSIBILITY PRINCIPLE (SRP)

THE PRODUCT

http://www.technicopedia.com/8865.html

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COMPONENT / SERVICE

http://www.technicopedia.com/8865.html

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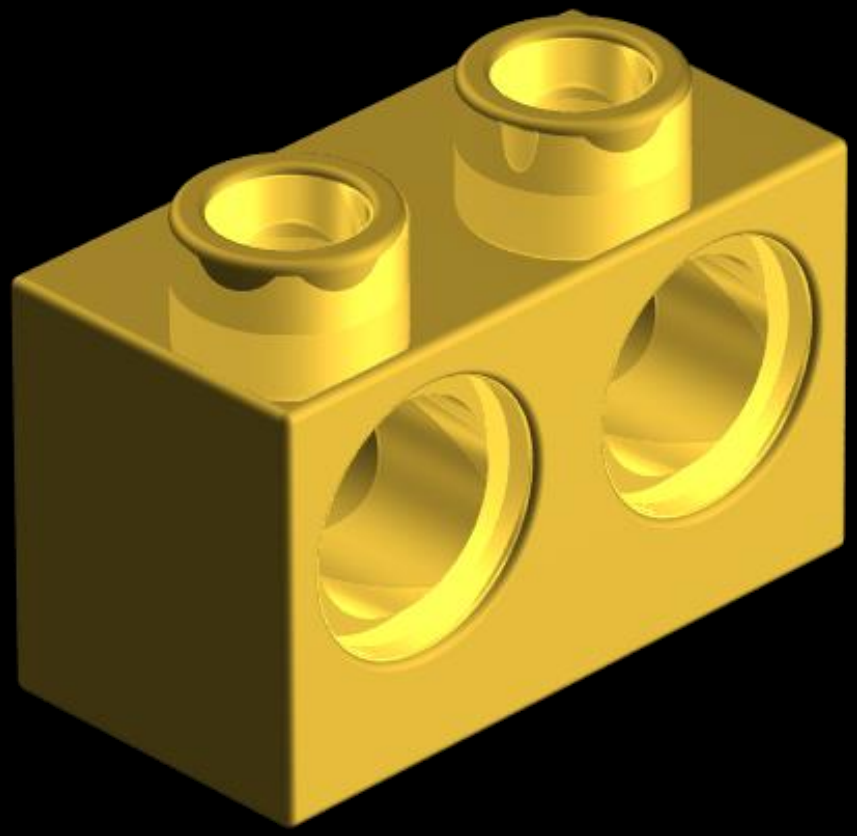
CLASS, STRUCT, ENUM ETC.



http://technicbricks.blogspot.com/2009/06/tbs-techpoll-12-results-2009-1st.html

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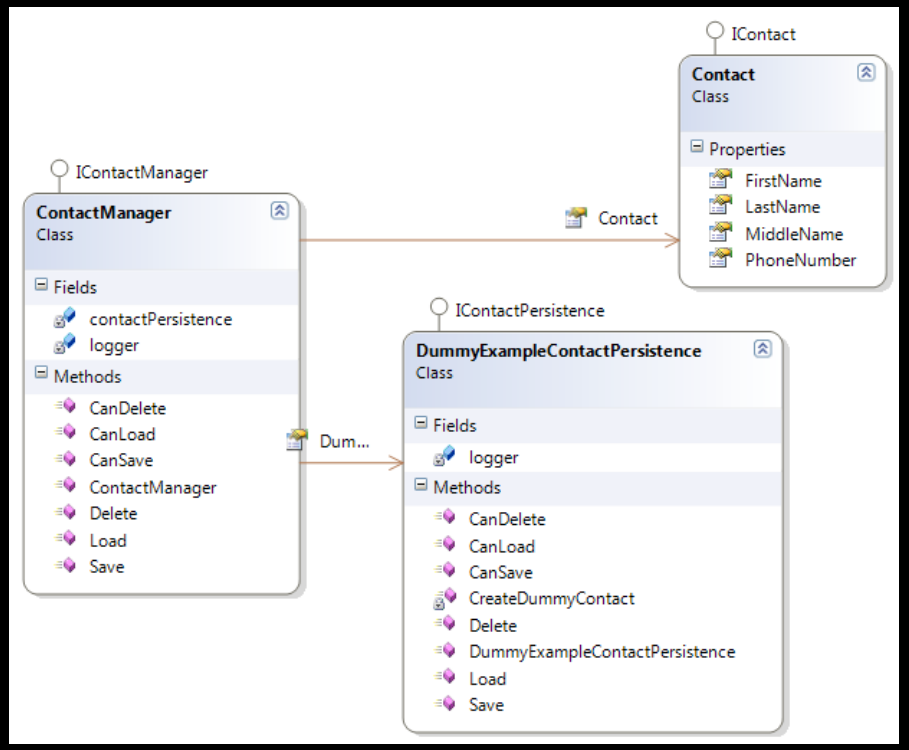
SEPARATION OF CONCERNS (SOC)

probably by Edsger W. Dijkstra in 1974

- "In computer science, separation of concerns (SoC) is the process of separating a computer program into distinct features that overlap in functionality as little as possible.

- A concern is any piece of interest or focus in a program. Typically, concerns are synonymous with features or behaviors. "



http://en.wikipedia.org/wiki/Separation_of_Concerns

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SINGLE RESPONSIBILITY PRINCIPLE (SRP)

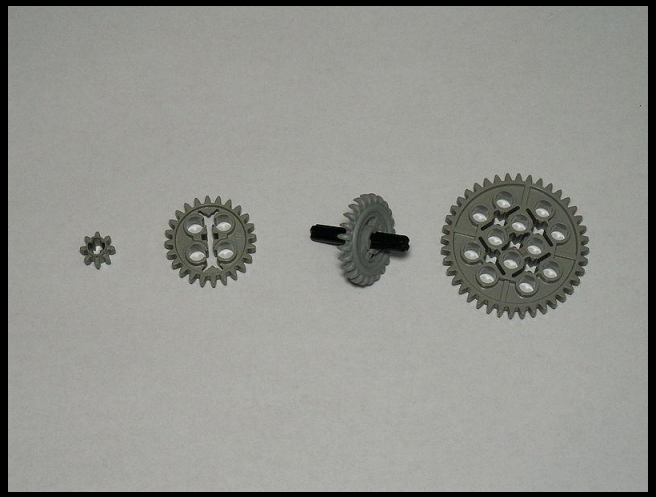
by Robert C Martin

"Every object should have a single responsibility, and that responsibility should be entirely encapsulated by the class."

http://en.wikipedia.org/wiki/Single_responsibility_principle

```
public class Logger : ILogger
{
    public Logger(ILogRepository  repository)
    {}

    public void Log(string message)
    {}
}
```



http://www.ericalbrecht.com

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INFORMATION HIDING PRINCIPLE (IHP)

INFORMATION HIDING PRINCIPLE (IHP)

by David Parnas (1972)

"... information hiding is the principle of segregation of the design decisions on a computer program that are most likely to change, .."

http://en.wikipedia.org/wiki/Information_hiding

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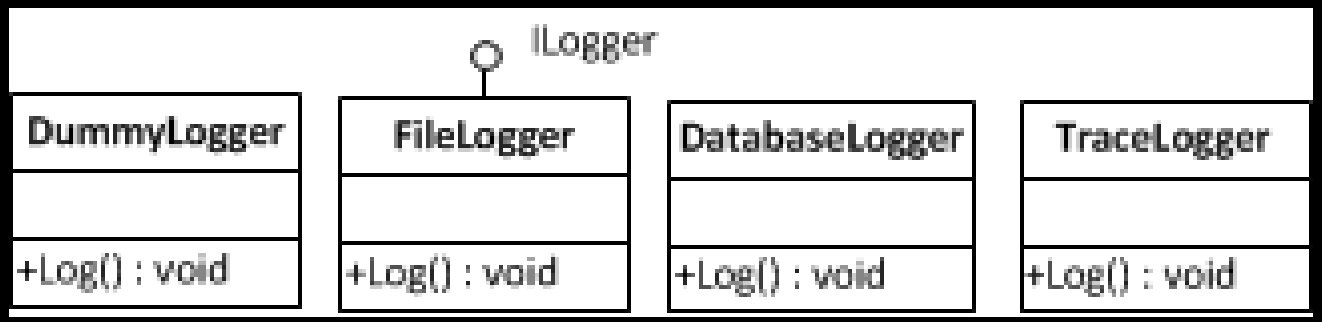
INTERFACES / CONTRACTS

- Decouple Usage and Implementation through introduction of a contract
  - Allows to replace implementation without changing the consumer

```
public interface ILogger
{
  void Log(string message);
}
```

```
public class Logger : ILogger
{
    public Logger(ILogRepository repository)
    {}

    public void Log(string message)
    {}
}
```



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OPEN CLOSED PRINCIPLE (OCP)

OPEN/CLOSED PRINCIPLE (OCP)

by Bertrand Meyer (1988)

An implementation is open for extension but closed for modification

http://en.wikipedia.org/wiki/Open/closed_principle

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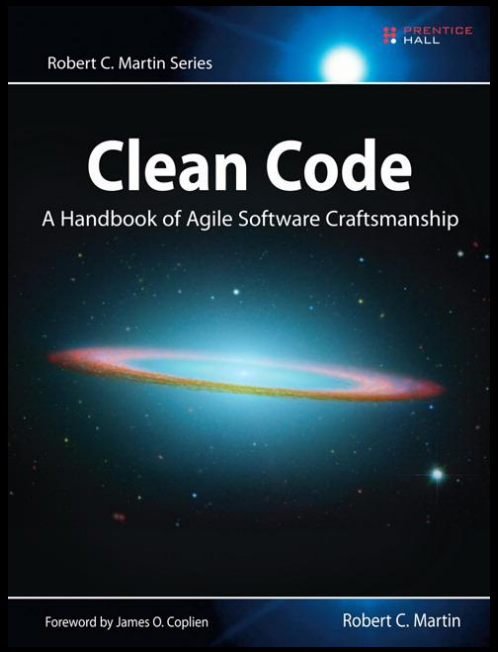
SUMMARY DESIGN PRINCIPLES

Maintainability is achieved through:

- Simplification and Specialization *(KISS, SoC, SRP, OCP,)*
- Decoupling *(LSP, DIP, IHP, Contracts, LoD, CoP, IoC or SOA)*
- Avoiding Code Bloat (DRY, YAGNI)
- Quality through Testability (all of them!)



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http://msdn.microsoft.com/en-us/library/cc707845.aspx
http://www.idesign.net/idesign/DesktopDefault.aspx?tabindex=5&tabid=11

DESIGN PRINCIPLES

Next Up: Dependency Injection