How to refactor the code

(without scaring the cat)

THANK YOU
FOR
YOUR ATTENTION

Once upon a time…

The end.

What my friends think I do

What my mom thinks I do

What society thinks I do

What my boss thinks I do

What I think I do

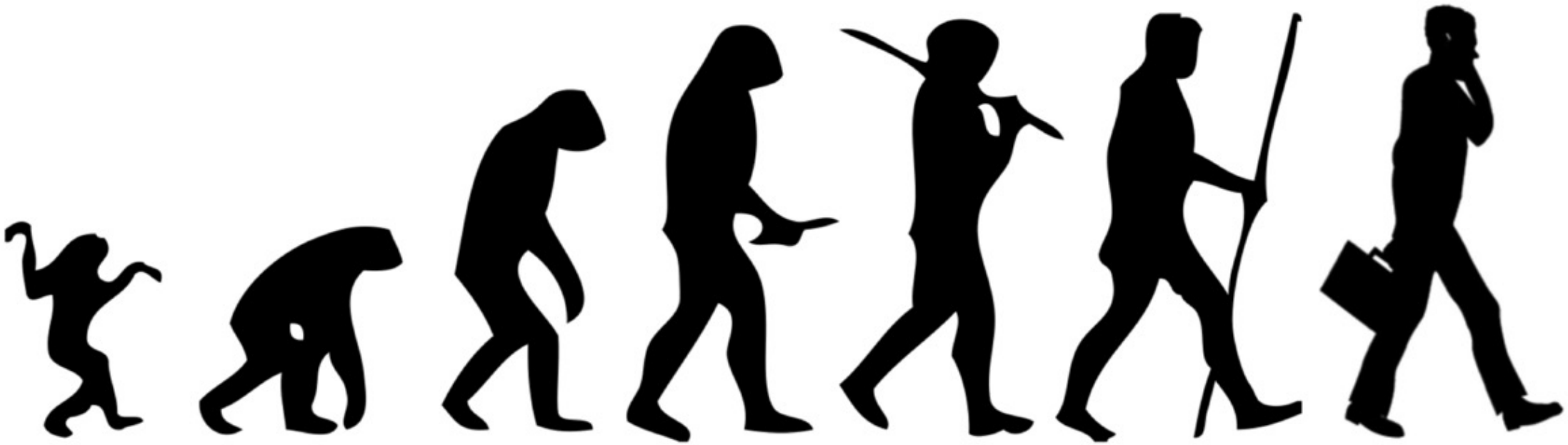
What I actually do

Law of code maintainability

“Always write your code as if the person that will maintain it after you is a violent psychopath that knows where you live”

- Han Solo

Evolution of Software Development



Code

Clean Code

Unit Test

All Unit Tests First

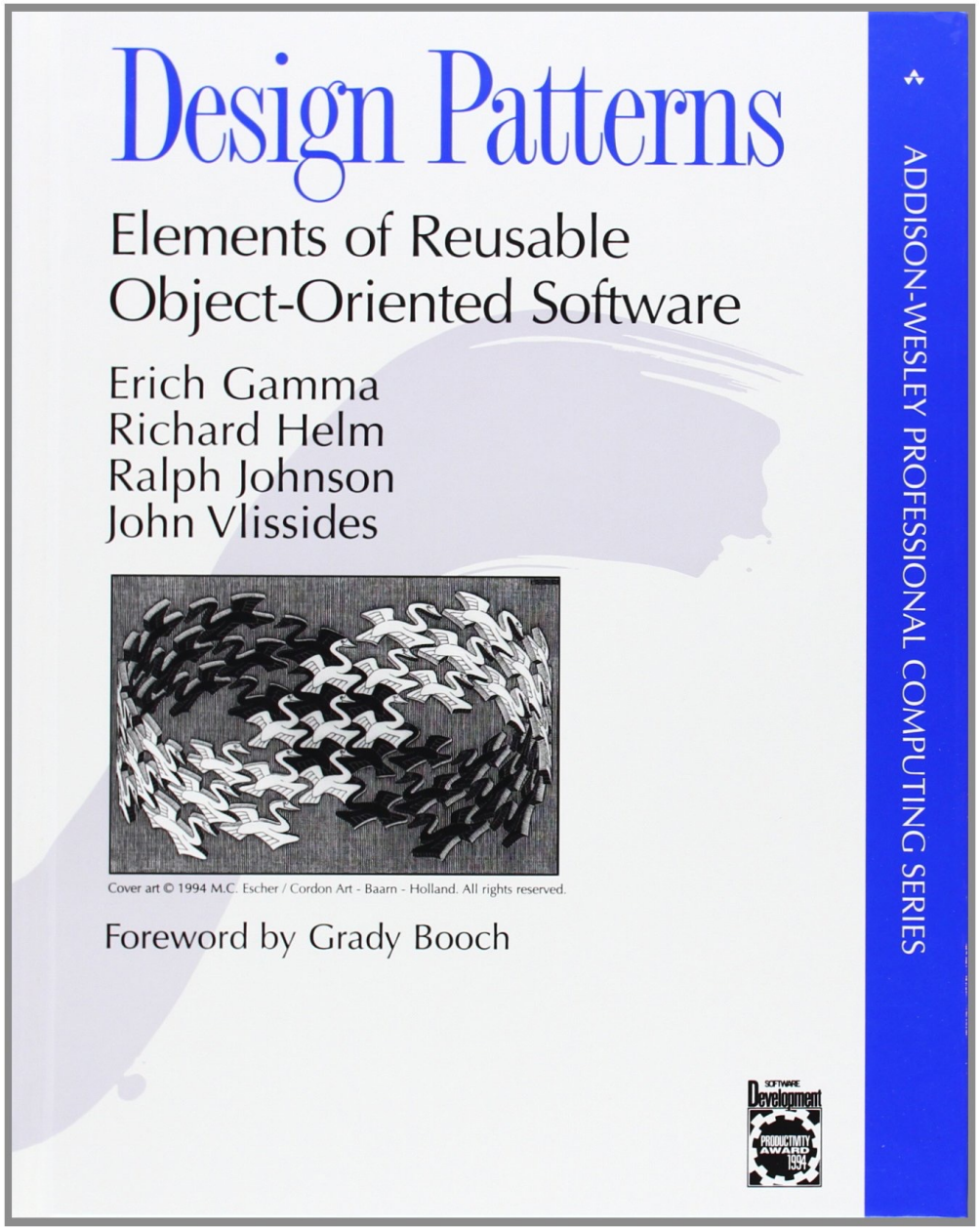
TDD
(Test Driven Development)

ATDD
(Acceptance Test Driven Development)

BDD
(Behaviour Driven Development)

The Timeless Way of Building

Christopher Alexander


Design Patterns
Elements of Reusable
Object-Oriented Software
Erich Gamma
Richard Helm
Ralph Johnson
John Vlissides
Cover art © 1994 M.C. Escher / Cordon Art - Baarn - Holland. All rights reserved.
Foreword by Grady Booch
ADDISON-WESLEY PROFESSIONAL COMPUTING SERIES
SOFTWARE Development PRODUCTIVITY AWARD 1994

O'REILLY®
10th Anniversary
Updated for Java 8
Head First
Design Patterns
A Brain-Friendly Guide
Avoid those embarrassing coupling mistakes
Learn why everything your friends know about Factory pattern is probably wrong
Discover the secrets of the Patterns Guru
Load the patterns that matter straight into your brain
Find out how Starbuzz Coffee doubled their stock price with the Decorator pattern
See why Jim's love life improved when he cut down his inheritance
Eric Freeman & Elisabeth Robson
with Kathy Sierra & Bert Bates

Definition of Pattern

“A reusable and generalized solution for a problem applied in a given context”

- Wikipedia

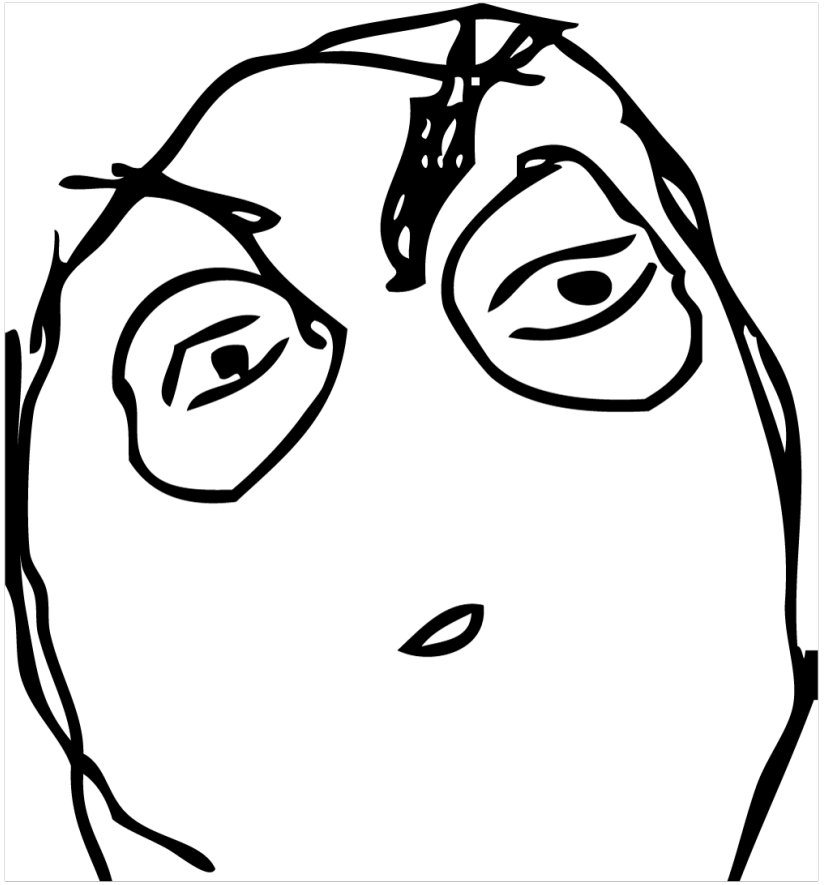
Definition of Pattern

“The solution to a mess so frequent that they managed to write a book about it”

- Johannes Gutemberg

Question

- Which patterns do you know?



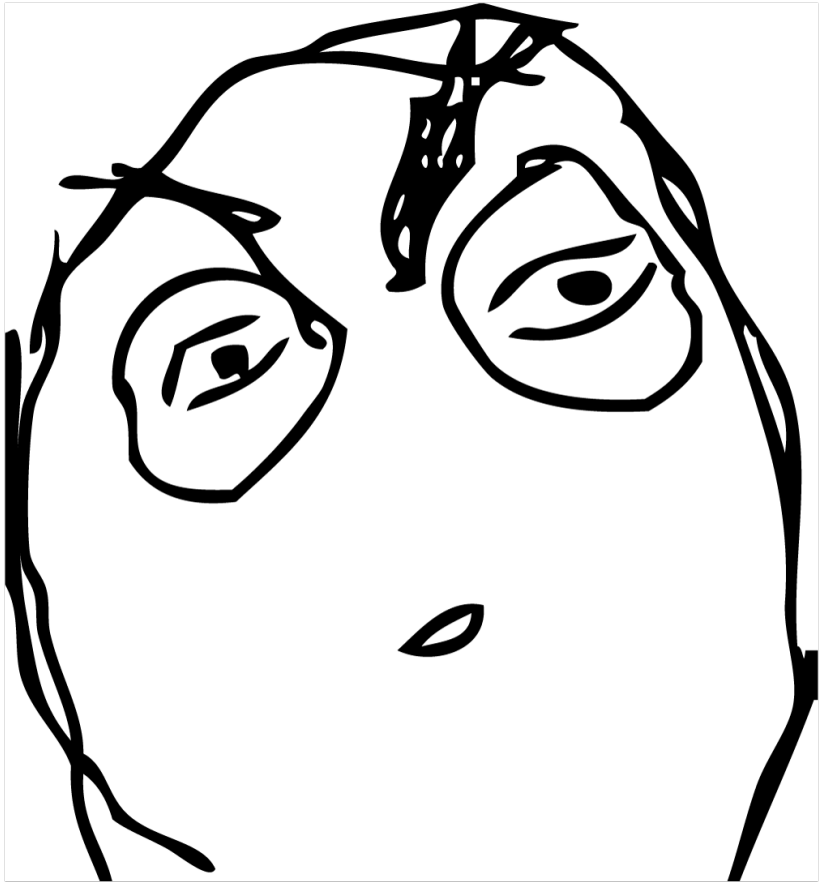
“The singleton pattern really sucks”

- Julius Caesar

Question

- Which patterns do you know?

Besides Singleton???



Which pattern is this?

```
FileInputStream fis = new FileInputStream("/stuff.gz");
BufferedInputStream bis = new BufferedInputStream(fis);
GzipInputStream gis = new GzipInputStream(bis);
```

And this?

```
Runtime run = Runtime.getRuntime();
System.out.println("" + run.freeMemory());
```

And this?

```
Arrays.sort(student, new NameComparator());
```

And this?

```
var evens = _.filter([1, 2, 3, 4, 5, 6], function(num){
      return num % 2 == 0;
});
```

Let’s dance

UNIONE EUROPEA
REPUBBLICA ITALIANA
PASSAPORTO

REPUBBLICA ITALIANA
MINISTERO DELL'INTERNO
CARTA DI IDENTITÀ / IDENTITY CARD
MILANO
CITTADINANZA
NATIONALITY
ITA
09.09.2016
21.08.2027
441584

Scade il 12/08/2028
Diritti segr. 0,26
c.i. 5,16
Certif. N.ro 199366
AY 9916738
REPVBBLICA ITALIANA
COMVNE DI
CORIGLIANO-ROSSANO
CARTA D'IDENTITA'
N.° AY 9916738

PATENTE DI GUIDA REPUBBLICA ITALIANA
1. ROSSI
2. MARIO
3. 09/05/77 ROMA (RM)
4a. 02/05/2013 4c. MIT-UCO
4b. 21/10/2015
5. XOOOOOOOX
7.
9. B

Let’s learn how to dance

Chain of responsibility

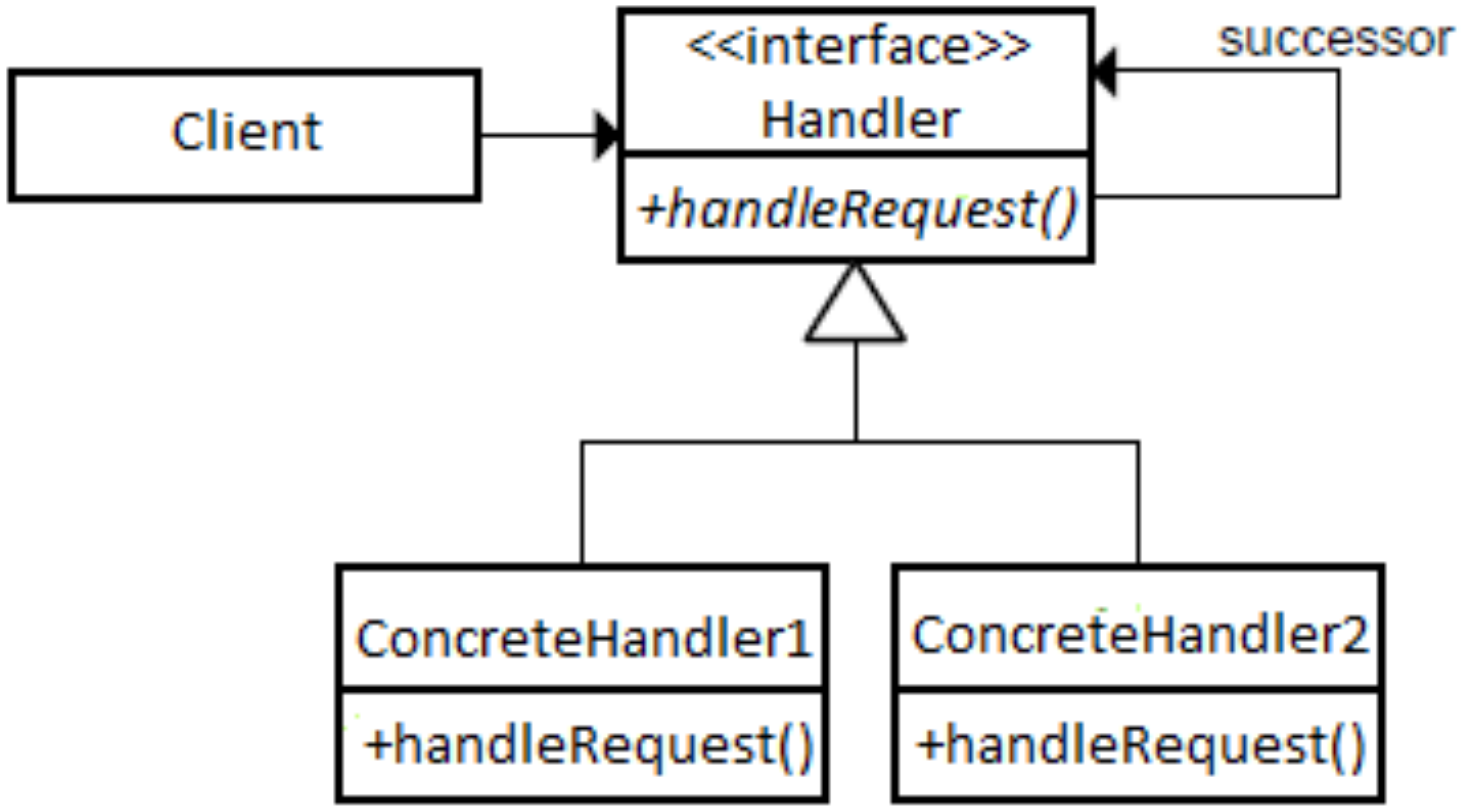
“A software design pattern that allows to split the objects that invoke a request from the objects that manage them”

- Wikipedia

Chain of responsibility

“A pattern that smiles when things go wrong, because it found someone else to blame”

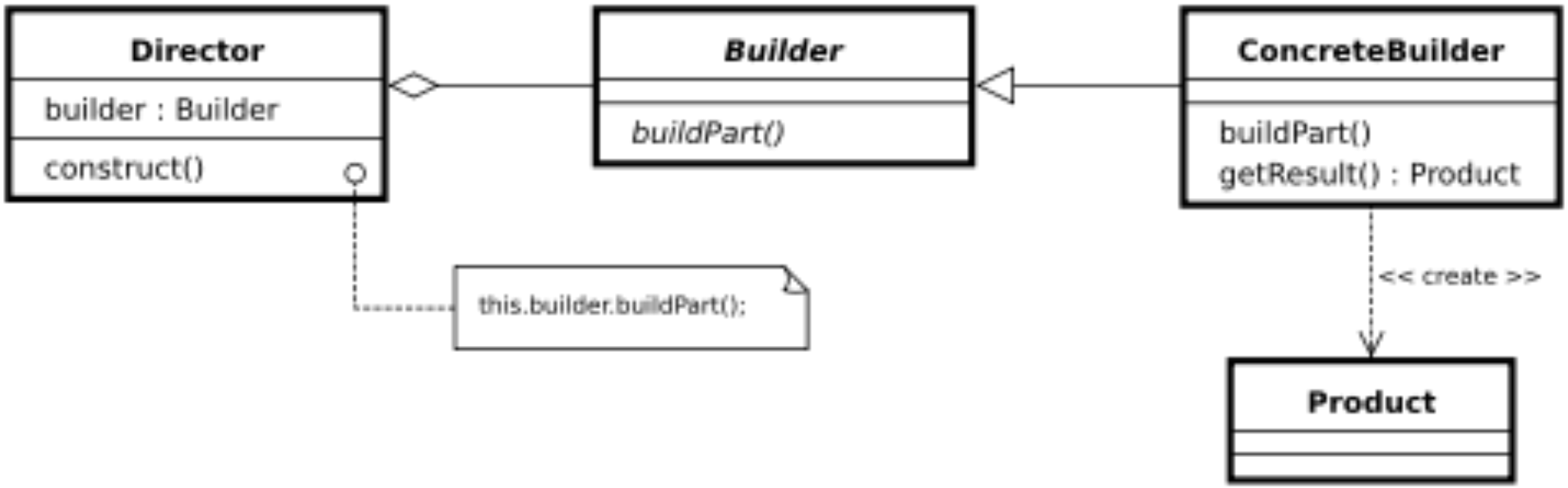
- Every developer on Earth


Client
<<interface>>
Handler
+handleRequest()
successor
ConcreteHandler1
+handleRequest()
ConcreteHandler2
+handleRequest()

Builder

“A software design pattern that splits the building of a complex object from its representation”

- Wikipedia

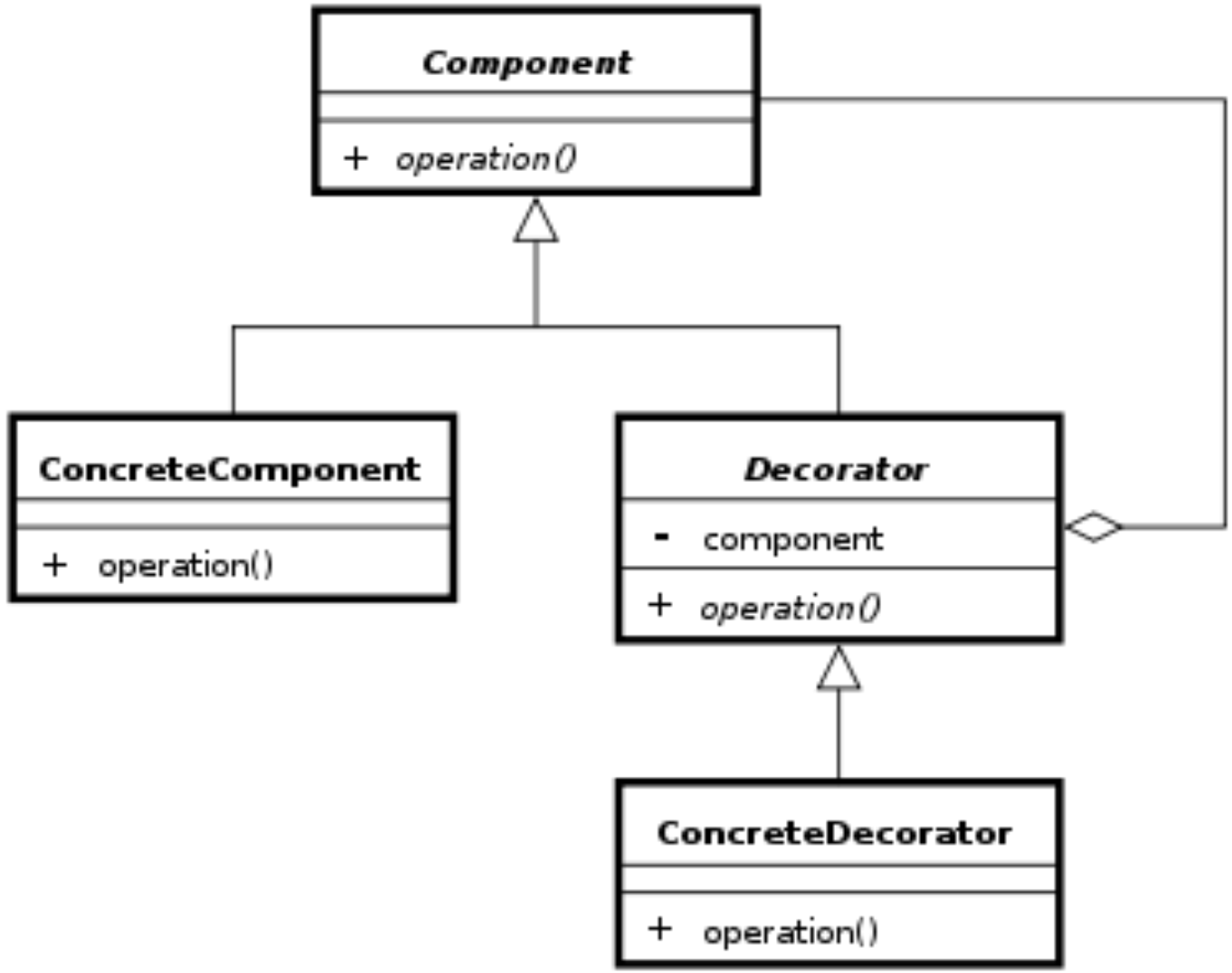

Director
builder : Builder
construct()
Builder
buildPart()
ConcreteBuilder
buildPart()
getResult() : Product
this.builder.buildPart();
<< create >>
Product

how to
make panda

Decorator

“A software design pattern that adds a behavior to an already existing object”

- Wikipedia


Component
+ operation()
ConcreteComponent
+ operation()
Decorator
- component
+ operation()
ConcreteDecorator
+ operation()

SOLID?

- **S**ingle Responsibility Principle
- **O**pen-Closed Principle
- **L**iskov Substitution Principle
- **I**nterface Segregation Principle
- **D**ependency Inversion Principle

SOLID - SRP

“Write classes whose behavior can be explained to your mother using just one sentence that does not contain any coordinating conjunctions”

- Abraham Lincoln

SOLID - OCP

“Cut the hands of those who change your classes. Kiss the hands of those who extend them”

- Don Vito Corleone

SOLID - DIP

“Those on the first floor are cleaning on behalf of those on the second floor. And they never talk to each other”

- Karl Marx Superintendent

Composition vs Inheritance

“Always prefer composition over inheritance”

- Sandro Pertini