CSSE 220 Day 25

Strategy Pattern, Search, Config Files

Checkout *StrategyPattern* project from SVN
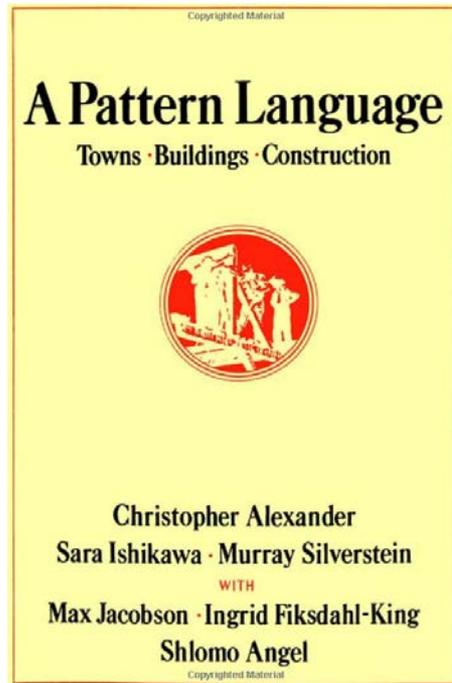
Questions

Strategy Design Pattern

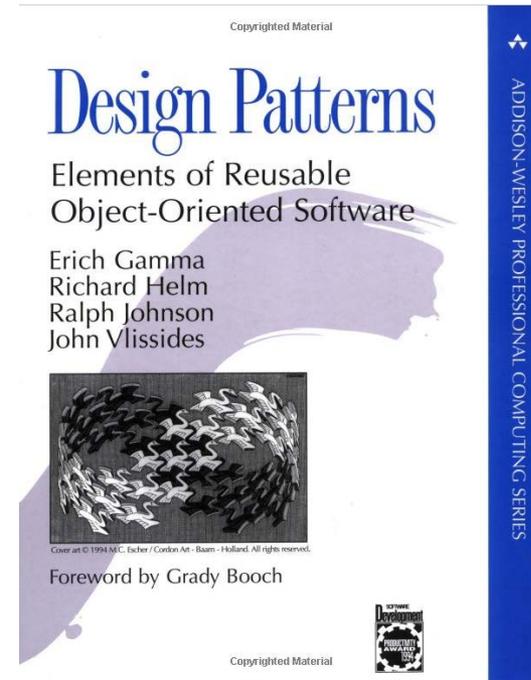An application of function objects

Design Pattern

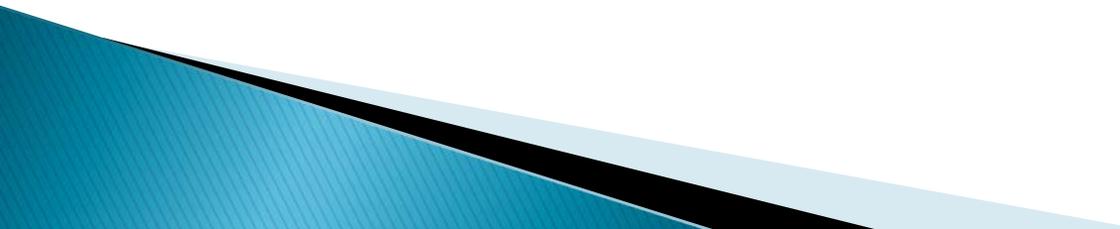- A *named* and *well-known* problem-solution pair that can be applied in a new context.

History

1977

2004

A Pattern Language
Towns · Buildings · Construction

Christopher Alexander
Sara Ishikawa · Murray Silverstein
WITH
Max Jacobson · Ingrid Fiksdahl-King
Shlomo Angel

Design Patterns
Elements of Reusable
Object-Oriented Software

Erich Gamma
Richard Helm
Ralph Johnson
John Vlissides

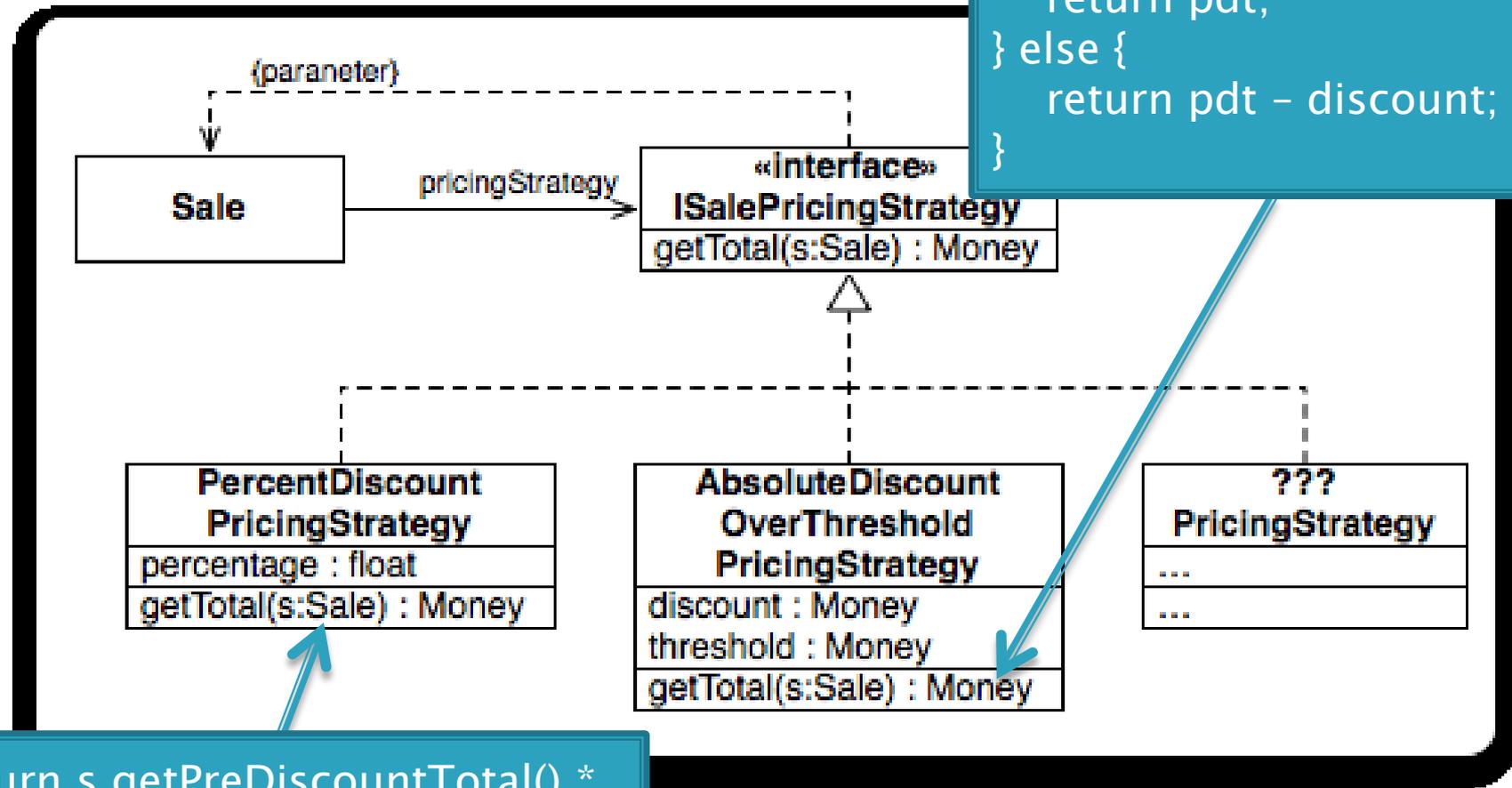Foreword by Grady Booch

ADDISON-WESLEY PROFESSIONAL COMPUTING SERIES

Strategy Pattern

- **Problem**: How do we design for varying, but related, algorithms or policies?
- **Solution**: Define each algorithm or policy in a separate class with a common interface
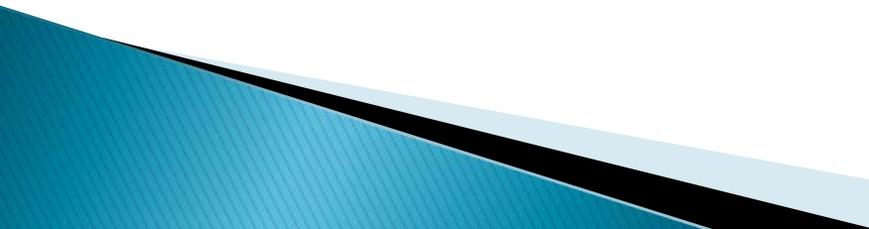
Strategy Example


```
double pdt =
s.getPreDiscountTotal();
if (pdt < this.threshold) {
    return pdt;
} else {
    return pdt – discount;
}
```

{parameter}

Sale

pricingStrategy

«interface»
ISalePricingStrategy

getTotal(s:Sale) : Money

**PercentDiscount
PricingStrategy**

percentage : float

getTotal(s:Sale) : Money

**AbsoluteDiscount
OverThreshold
PricingStrategy**

discount : Money
threshold : Money

getTotal(s:Sale) : Money

**???
PricingStrategy**

...

...

```
return s.getPreDiscountTotal() *
            this.percentage;
```

Search Review

》》 Linear vs. Binary Search

Searching

- Consider:
  - Find Cary Laxer's number in the phone book
  - Find who has the number 232-2527

- Is one task harder than the other? Why?

- For searching unsorted data, what's the worst case number of comparisons we would have to make?

Binary Search of Sorted Data

- A divide and conquer strategy

- Basic idea:
  - Divide the list in half
  - Decide whether result should be in upper or lower half
  - Recursively search that half

Analyzing Binary Search

- What's the best case?

- What's the worst case?

Putting It All Together

» **Represent search algorithms using a strategy pattern**

Use a configuration file to specify the strategy

Check out from Loderunner repo and work as a team

Help each other to understand

Team project work time

» When you have finished the **StrategyPattern** exercise

Work with your team on the team project