

Object Oriented Analysis & Design

面向对象分析与设计

Lecture_08 通用的职责分配软件原则 GRASP (二)

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■ 2、GRASP原则七: 纯虚构 Pure Fabrication

- 如果依据信息专家原则获得的解决方案不合适, 既不想违反低耦合、高内聚, 也不想违反其他的原则, 该如何把职责分配给对象?
- 左右为难....

2.1 GRASP rule7: Pure Fabrication 纯虚构

- **Name: Pure Fabrication**
- **Problem:** 依据一些原则（比如，信息专家）获得的解决方案不合适的情况下，既不想违反低耦合、高内聚，也不想违反其他的原则，如何把职责分配给对象？ What objects should have the responsibility, when you do not want to violate High Cohesion and Low Coupling, or other goals, but solutions offered by Expert (for example) are not appropriate?
- **Solution:** 把高度内聚的职责分配给虚构出来的一个类，这个类在领域模型里没有对应的概念 Assign a highly cohesive set of responsibilities to an artificial or convenience class that does not represent a problem domain concept – something made up to support high cohesion, low coupling, and reuse
- **推论:** 这种方式在有的场合能起到支持低耦合、高内聚、重用的效果

2.2 Pure Fabrication: 案例1

- **Where to assign the responsibility to save a Sale object?**
 - Even though the Sale is a logical candidate to save itself in the database (by virtue of Information Expert), it leads to a design with low cohesion (why?) and low reuse potential (why?)
- **Solution: Fabricate虚构 a new class PersistentStorage with the purpose of managing objects in persistent storage medium**



The Sale remains well design, with high cohesion and low coupling

The PersistentStorageBroker class is itself relatively cohesive

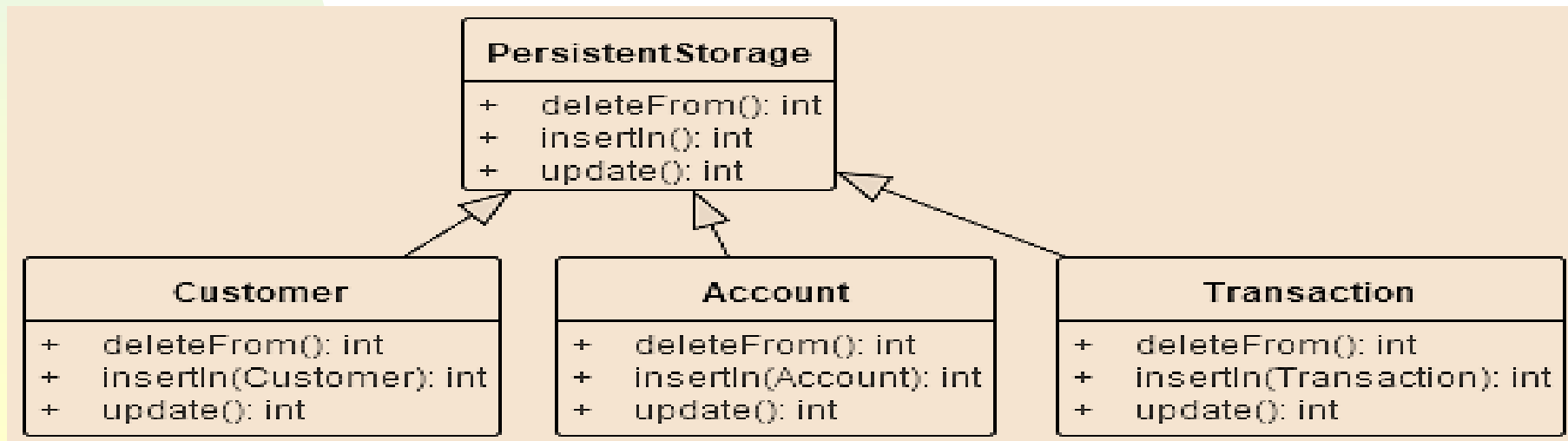
The PersistentStorageBroker class is a very generic and reusable object

2.2 Pure Fabrication: 案例2

- **Example:** 考虑一个银行应用的几个类: Account、Customer、Transaction等, 都涉及到数据库操作: 增删改查
- **Solution 1:** By Information Expert, assign methods insertIn(OODB db), update(OODB db), deleteFrom(OODB db) to classes Account, Customer, Transaction etc.

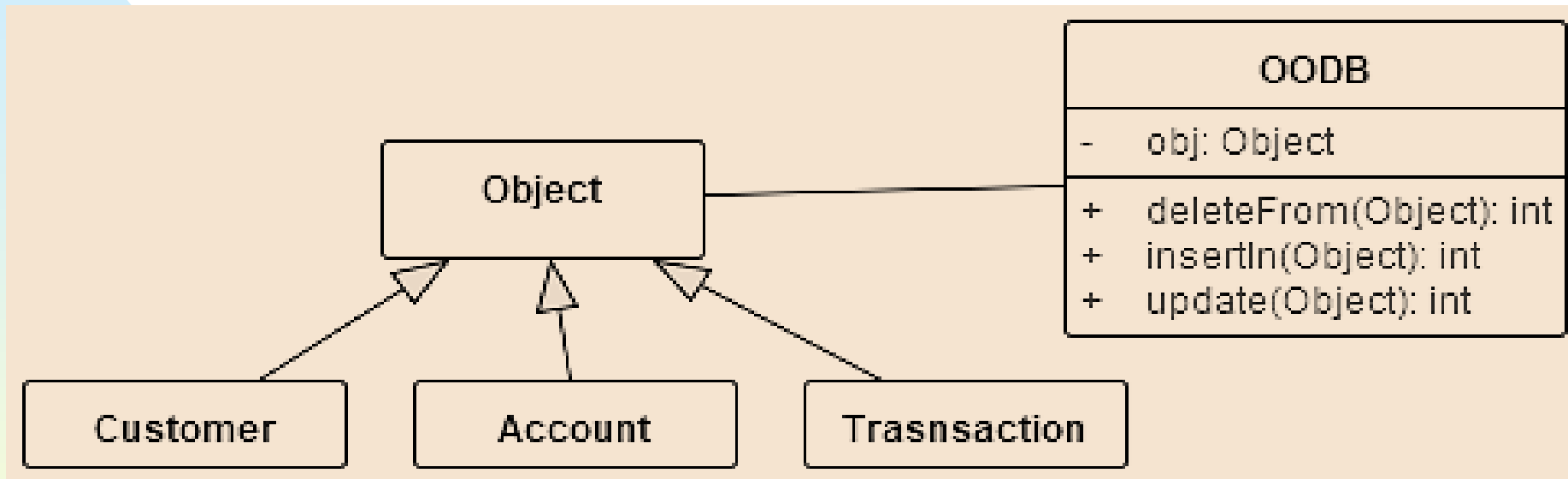


- **Solution 2:** Use polymorphism and assign methods insertIn(OODB db), update(OODB db), deleteFrom(OODB db) to superclass Object



2.2 Pure Fabrication: 案例2

- **Solution 3:** Since these functions are highly correlated, and they do not concern domain logic, group them together into class OODB with methods insert(Object obj), delete(Object obj), update(Object obj)



- **What are the advantages of solution 2 over solution 1?**
 - 通过多态机制，每个类做什么事规定好了，但如何做，按自己的特点做
- **What are the advantages of solution 3 over solution 2?**
 - S2保存的是不同的数据，如客户数据、账户数据、交易数据
 - S3保存的是对象，所有的数据都是对象。相同的接口

2.2 Pure Fabrication: 案例3

■ Monopoly Problem: Handling the Dice

Figure 25.8. DCD for a *Cup*.

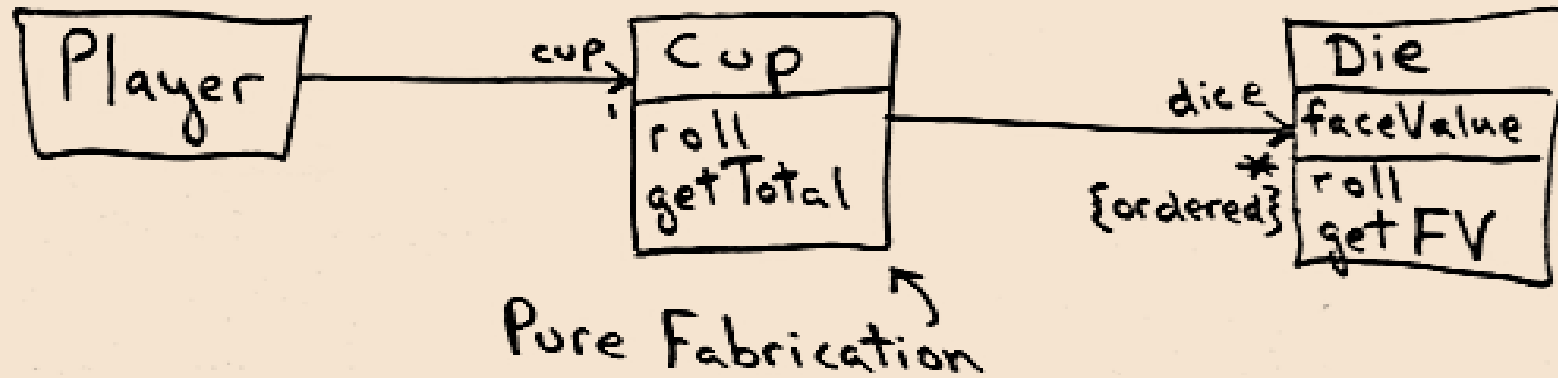
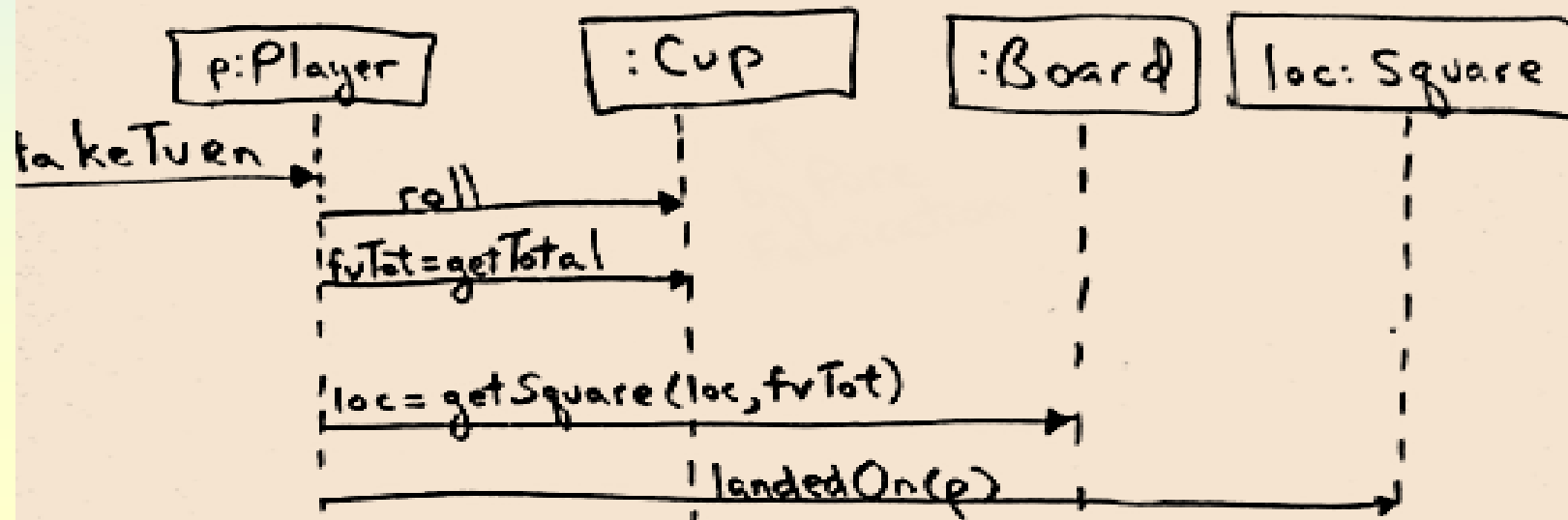


Figure 25.9. Using the *Cup* in the Monopoly game.



2.3 纯虚构原则讨论

■ 应用纯虚构原则

- A Pure Fabrication should be designed with high potential for **reuse**
 - – The responsibilities must remain small and cohesive
 - Reuse potential should increase
- Many existing GOF **patterns** are examples of Pure Fabrication
- 多数情况下是按功能类定义新的类，所以，是一种“功能为中心的”对象 It is partitioned on related functionality, and so is a kind of function-centric object
- 如果功能的相关性比较高的话，满足高内聚 High Cohesion is supported if functions are highly related

■ 风险

- 宽泛地说，虚构对象分为两类 design of objects can be broadly divided into two groups:
 - 代表性概念为主的分解 representational decomposition, ex, sale
 - 行为性概念为主的分解 behavioral decomposition, ex, PersistentStorage
- 可能导致面向功能或者面向过程的分析/设计，然后用OO语言去实现





■ **本讲结束**