

Object Oriented Analysis & Design

面向对象分析与设计

Lecture_03 面向对象分析（一）

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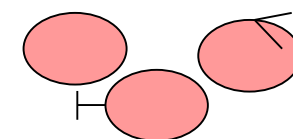
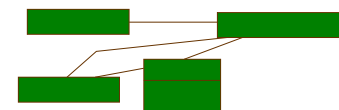
■ 4、面向对象分析方法（二）分析模型法

- 通过“废品回收机”案例

- 理解边界类、实体类、控制类
- 帮助同学们掌握利用分析模型法，构建概念模型

复习：面向对象分析的三种方法

- 1) Conceptual model (Larman)概念模型,又称“名词法”
 - Produce a “light” class diagram
- 2) Analysis model with stereotypes (Jacobson)分析模型
 - Boundaries, entities, control
- 3) CRC cards (Beck, Cunningham) CRC法,类/职责/协作
 - Index cards and role playing



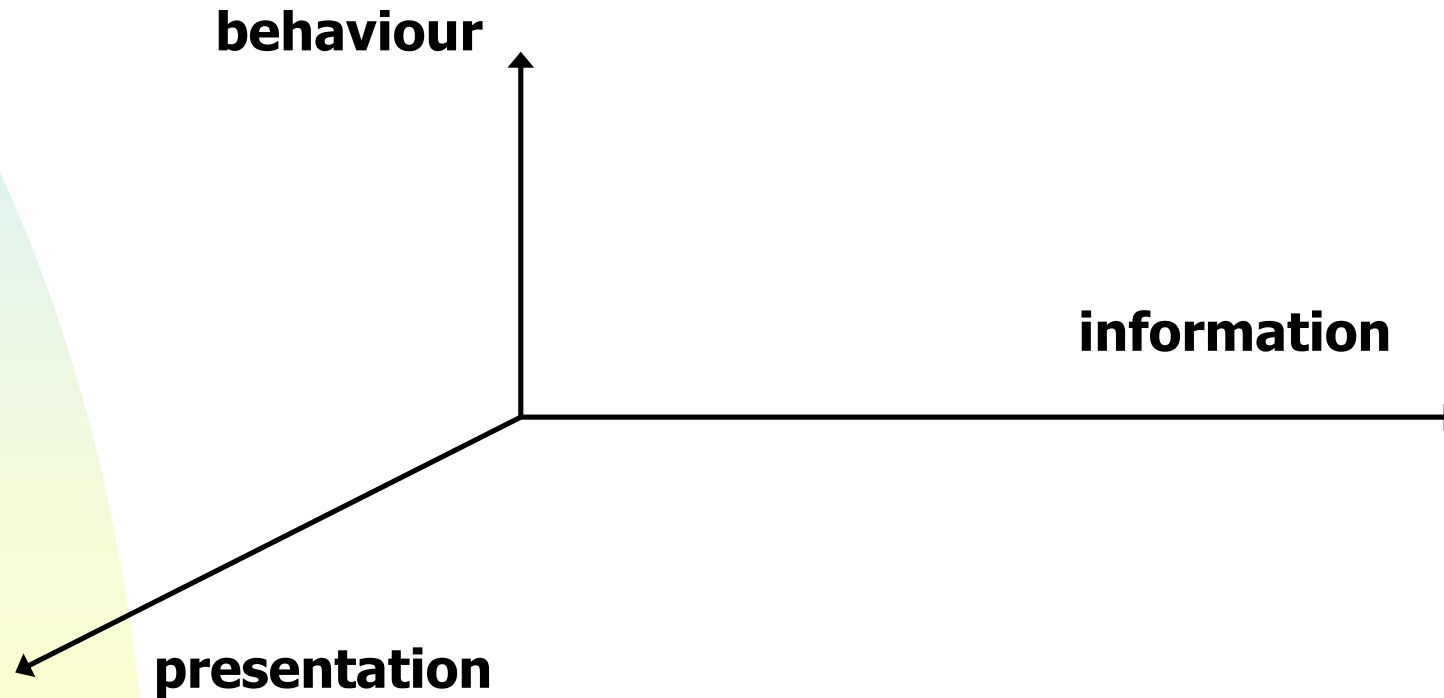
- A good analyst knows more than one strategy and even may mix strategies in order to identify the objects and relationships for the design phase. 一个好的分析师掌握多种技术，知道如何混合使用各种技术，目标只有一个：发现对象、定义对象之间的关系。

4.1 分析模型定义

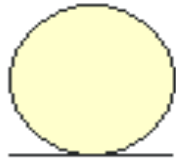
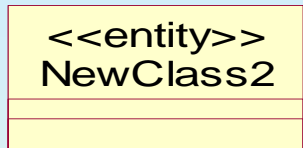
- **分析模型法 Analysis model with stereotypes**
 - 是由Jacobson提出的
 - 用于描述系统规格说明
 - 一个健壮、稳定的模型，必须与实现环境无关
 - 实现环境的任何变化，不会影响到系统的逻辑结构
 - 分析模型能够关注到系统的信息、行为、展示（输入/出）等特性

4.2 特性: Behaviour - Information - Presentation

- The model is defined in information - behaviour - presentation space.

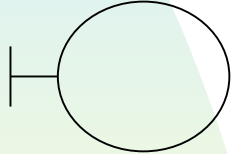
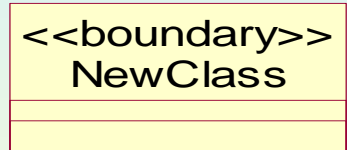


4.3 分析模型的表示符号



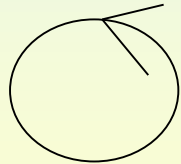
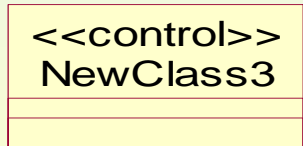
Entity

On information – behaviour plane and
incline to information axis



Boundary / Interface

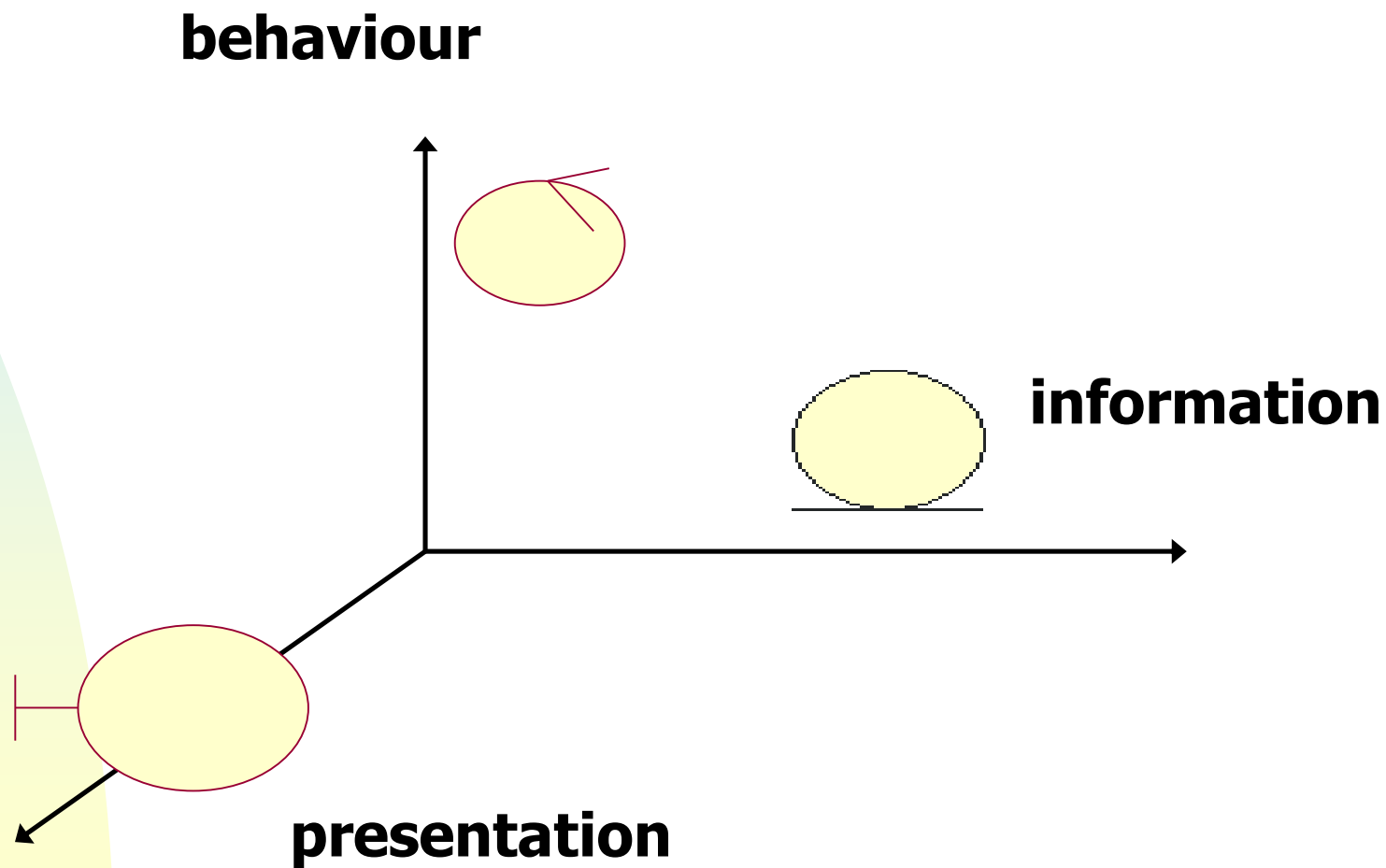
On the presentation axis



Control

On information – behaviour
plane but incline towards
behaviour axis

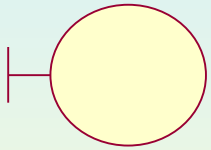
4.3 分析模型的表示符号



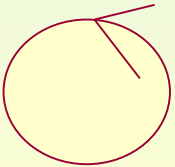
4.4 分析模型的语义



- An **entity object** models information that shows the state of a system. This information is often used to record the effects of operations and therefore is related to the behaviours of the system.

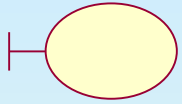


- A **boundary/interface object** models inputs and outputs and operations that process them.



- A **control object** models functionality/operations regarding to validate and decide whether to process and pass information from the interface object to the entity object or the way around.

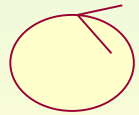
4.4 分析模型的使用



- Identifying **interface objects**
 - functions directly related to actors

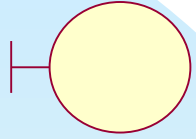


- Identifying **entity objects**
 - information used in an use case and functions of processing the information



- Identifying **control objects**
 - functions that link interface objects and entity objects

4.5 分析模型案例：废品回收机



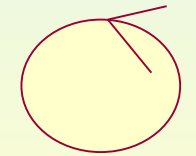
- Identifying **interface objects**

- Printer, Customer Panel



- Identifying **entity objects**

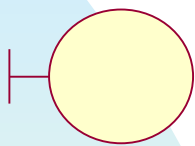
- Long term information: Crate, Bottle, Can
- Superclass: Deposit item
- Short term information: Receipt basis



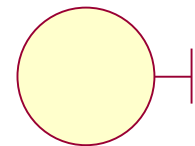
- Identifying **control objects**

- Deposit item receiver

4.6 废品回收机：接口对象（边界类）

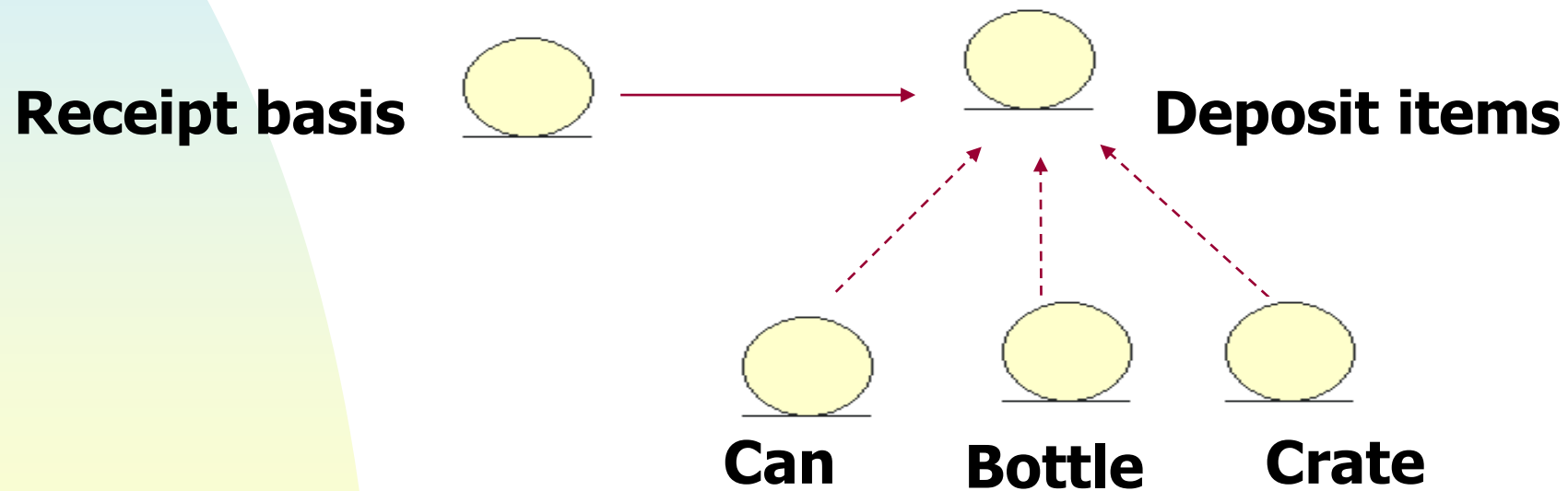


Customer panel

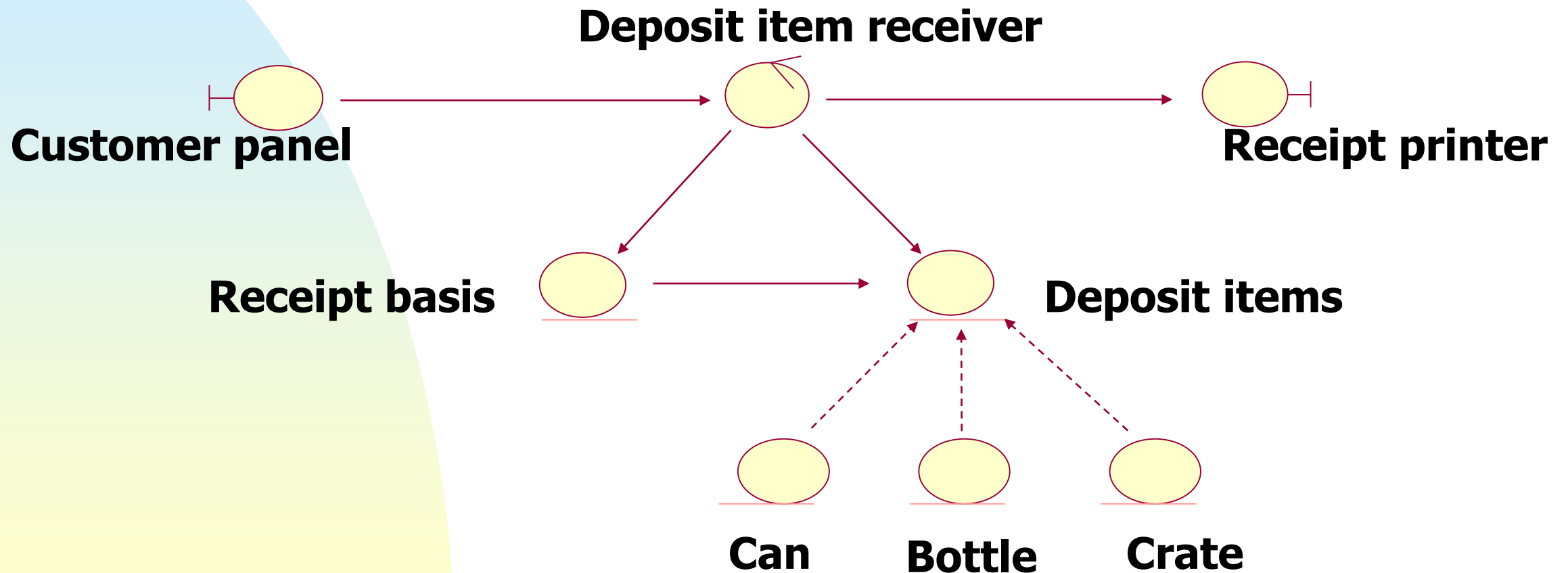


Receipt printer

4.7 废品回收机：实体对象



4.8 废品回收机：控制对象



分析模型小结

- **The main task is identifying the objects**
- **Also: Relationships between objects**
- **Three strategies:**
 - Conceptual Model (concepts as objects)
 - CRC cards (index cards as objects)
 - Analysis Model (Stereotypes as objects)
- **Next step: Design --- →**
 - “小试” 设计
 - 体会一下分析、设计的全过程





■ **本讲结束**