

Object Oriented Analysis & Design

面向对象分析与设计

Lecture_04 面向对象分析(二)

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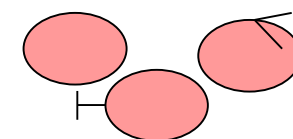
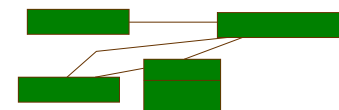
课程开始之前...

- 故事共勉：【季子挂剑】 ---- “为人真诚，不欺！”
 - 季子，名叫“札”，为春秋时代吴国国君寿梦的小儿子。封于延陵
 - “延陵季子将西聘晋，带宝剑，以过徐君。徐君观剑不言而色欲之，延陵季子为有上国之使，未献也，然其心许之矣。致使于晋故，反则徐君死于楚，于是脱剑致之嗣君。从者止之曰：‘此吴之宝也，非所以赠也。’延陵季子曰：‘吾非赠之也。先日吾来，徐君观吾剑不言而其色欲之，吾为有上国之使，未献也然，吾心许之矣。今死而不进，是欺心也。爱剑伤心，廉者不为也’遂脱剑致之嗣君，嗣君曰：‘先君无命，孤不敢受剑’于是季子又以剑带徐君墓树而去”

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- **1、标识概念类和对象的注意点...**
 - **Identifying Classes and Objects**

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。

标识概念类和对象

■ Example: A partial requirements document:

The **user** must be allowed to specify each **product** by its primary **characteristics**, including its **name** and **product number**. If the **bar code** does not match the **product**, then an **error** should be generated to the **message window** and entered into the **error log**. The **summary report** of all **transactions** must be structured as specified in section 7.A.

概念类（参考）：
User pannel
Product
Message Window
Error log
Transaction

Of course, not all nouns will correspond to a class or object in the final solution

不作为概念类的名称（参考）：
Characteristics \ name \ product number \ bar code;
Error
Summary report

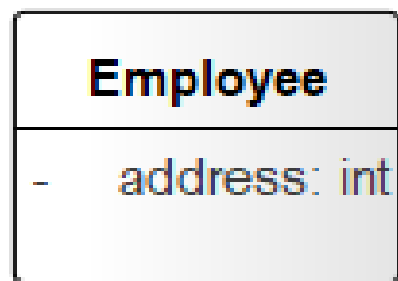
标识概念类和对象

■ 原则

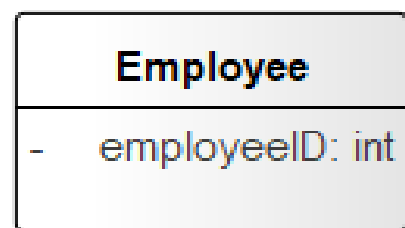
- **类，表示一组具有相同行为、属性的对象** Remember that a class represents a group (classification) of objects with the same behaviors
- **类，在表示对象群体的时候，一般用单数** Generally, classes that represent objects should be given names that are singular nouns
 - 如 Coin, Student, Message
- **根据类，可以创建所需要数量的对象个体** We are free to instantiate as many of each object as needed
- **类名的选择，很重要！要能够帮助大家理解**
 - 如 Customer? Or User: 哪个更好，视情况而定

标识概念类和对象

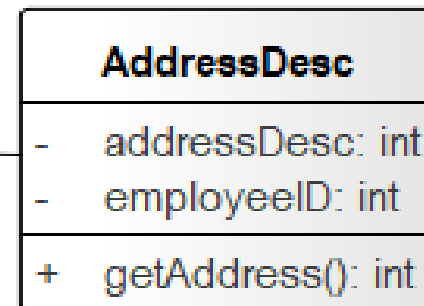
- 可能的抉择：一个**名词**，是作为概念类合适，还是作为某个类的属性更合适？ Sometimes it is challenging to decide whether something should be represented as a class
 - For example, should an **employee's address** be represented as a set of instance variables or as an Address object
- 一般原则 General way to do:
 - 对问题了解得越细越透彻，越有把握做出决定 The more you examine the problem and its details, the more clear these issues become



当员工数量较少时
删除员工，地址也没了



当员工数量较多时，高
效删除员工，地址还在

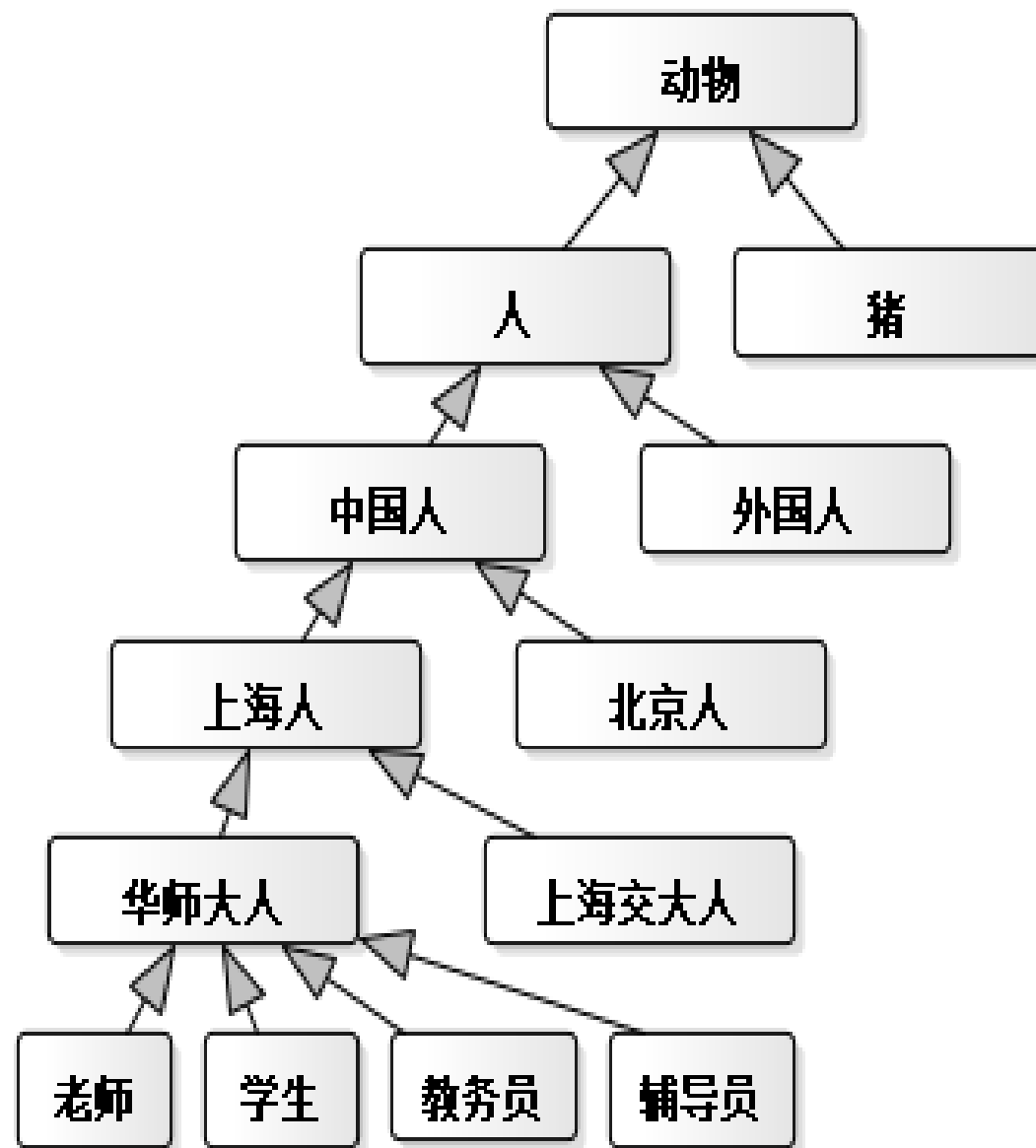


标识概念类和对象

- 可能的抉择：一个名词，是作为概念类合适，还是作为某个类的属性更合适？ Sometimes it is challenging to decide whether something should be represented as a class
- 请同学们回去自己练习
 - 例如，产品描述（product description）与产品？
 - 例如，手机的PIN码与手机用户？因为PIN码本身可以处在“激活”、“锁定”、“正常”、“失效”等状态

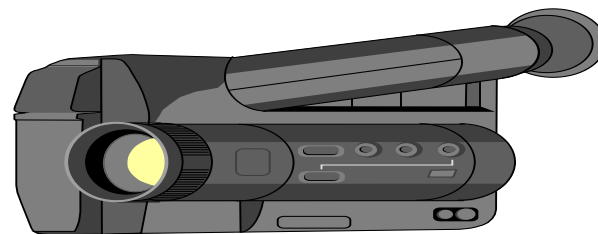
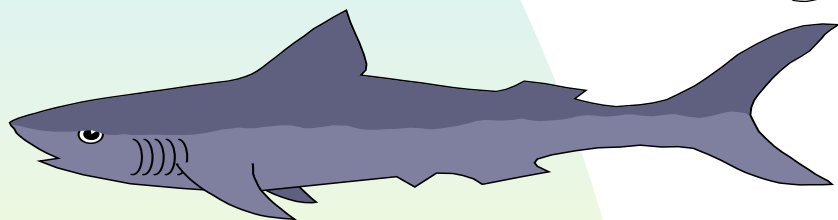
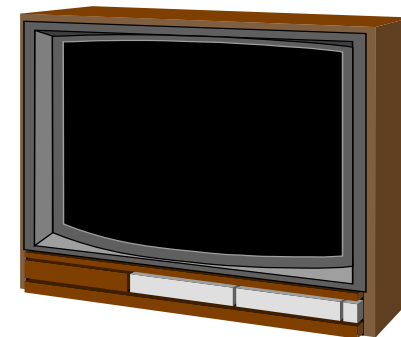
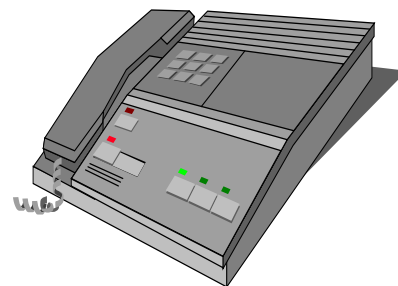
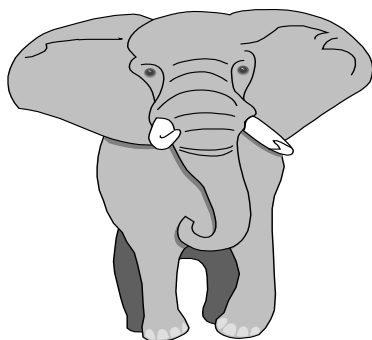
标识概念类和对象

- 在适当的细节层面定义概念类 We want to define classes with the proper amount of detail
 - 当发现一个类非常复杂时，要考虑拆分成多个小一点的类 When a class becomes too complex, it often should be decomposed into multiple smaller classes to distribute the responsibilities
 - 但是，又不能有太多的类！ But , not too many classes
- 例如，请同学们自己思考
 - 人？
 - 是把家里的各类电器单列，如TV、CD、电吹风、热水器等等？ 还是直接用“电器设备 Appliance”来代表？
- 取决于我们要解决的问题 It all depends on the details of the problem being solved



标识概念类和对象

■ 你能发现多少个类？



- animal and digital devices 动物和电子设备
- moving and static things 移动事物和静止事物

- Indoor and outdoor things 室内事物和室外事物
- If only one class? 如果只有一个类?
图标 (Icon)
濒危事物 endangered things

■ 总之，类的选择依赖于应用领域

In general, class design depends on application domain

标识概念类和对象

■ 在标识概念类的过程中

- 同时要考虑每个类的职责分配
- 但是不需要在领域模型中明示

■ 总的原则

- 即将要开发的系统，每项任务（每个职责）都需要有一个或多个类去处理
Every activity that a system must accomplish must be represented by one or more methods in one or more classes
- 表示成类的操作（一般是动词）
- 在分析、设计的早期，不必要定义每个类的每个操作
- 一开始，表示成较为粗狂的职责描述
- 例如，要求2班“打扫卫生”
 - “打扫卫生” -- → 职责描述
 - “打水”、晒水、擦窗、抹桌子、扫地、整理桌椅、擦黑板 -- → 操作





■ **本讲结束**