# Object Oriented Analysis & Design
# 面向对象分析与设计

## Lecture_05 领域模型

**主讲: 姜宁康 博士**

- 3、领域模型 案例
  - 本课程使用的两个案例场景

# 3.1 Example: POS（Point of Sale）超市的收银机

- **NextGen POS 应用的第一次迭代所实现的功能**
  - **Implement a basic, key scenario of the Process Sale use case**
    - **entering items and receiving a cash payment**
  - **Implement a Start Up use case**
    - **as necessary to support the initialization needs of the iteration**
  - **Nothing fancy or complex is handled, just a simple happy path scenario, and the design and implementation to support it**
  - **There is no collaboration with external services, such as a tax calculator or product database**
  - **No complex pricing rules are applied**
  - **The design and implementation of the supporting UI, database, and so forth, would also be done, but is not covered in any detail**

- **Note: here, we not start from risk/architecture, instead, we start from simple, to help you to understand**

# 3.2 Example: Monopoly（大富翁游戏）

# 3.2 Example: Monopoly

- **Requirements for the first iteration of the Monopoly application follow:**
  - **Implement a basic, key scenario of the Play Monopoly Game use case**
    - **players moving around the squares of the board**
  - **Implement a Start Up use case**
    - **as necessary to support the initialization needs of the iteration**
  - **Two to eight players can play**
  - **A game is played as a series of rounds. During a round, each player takes one turn. In each turn, a player advances his piece clockwise around the board a number of squares equal to the sum of the number rolled on two six-sided dice**
  - **Play the game for only 20 rounds**
  - **After the dice are rolled, the name of the player and the roll are displayed. When the player moves and lands on a square, the name of the player and the name of the square that the player landed on are displayed**
  - **In iteration-1 there is no money, no winner or loser, no properties to buy or rent to pay, and no special squares of any kind**
  - **Each square has a name. Every player begins the game with their piece located on the square named "Go”**
    - **The square names will be Go, Square 1, Square 2, … Square 39**
  - **Run the game as a simulation requiring no user input, other than the number of players**

# 3.3 POS Example: Create Domain Model

## Step1: Conceptual classes in POS

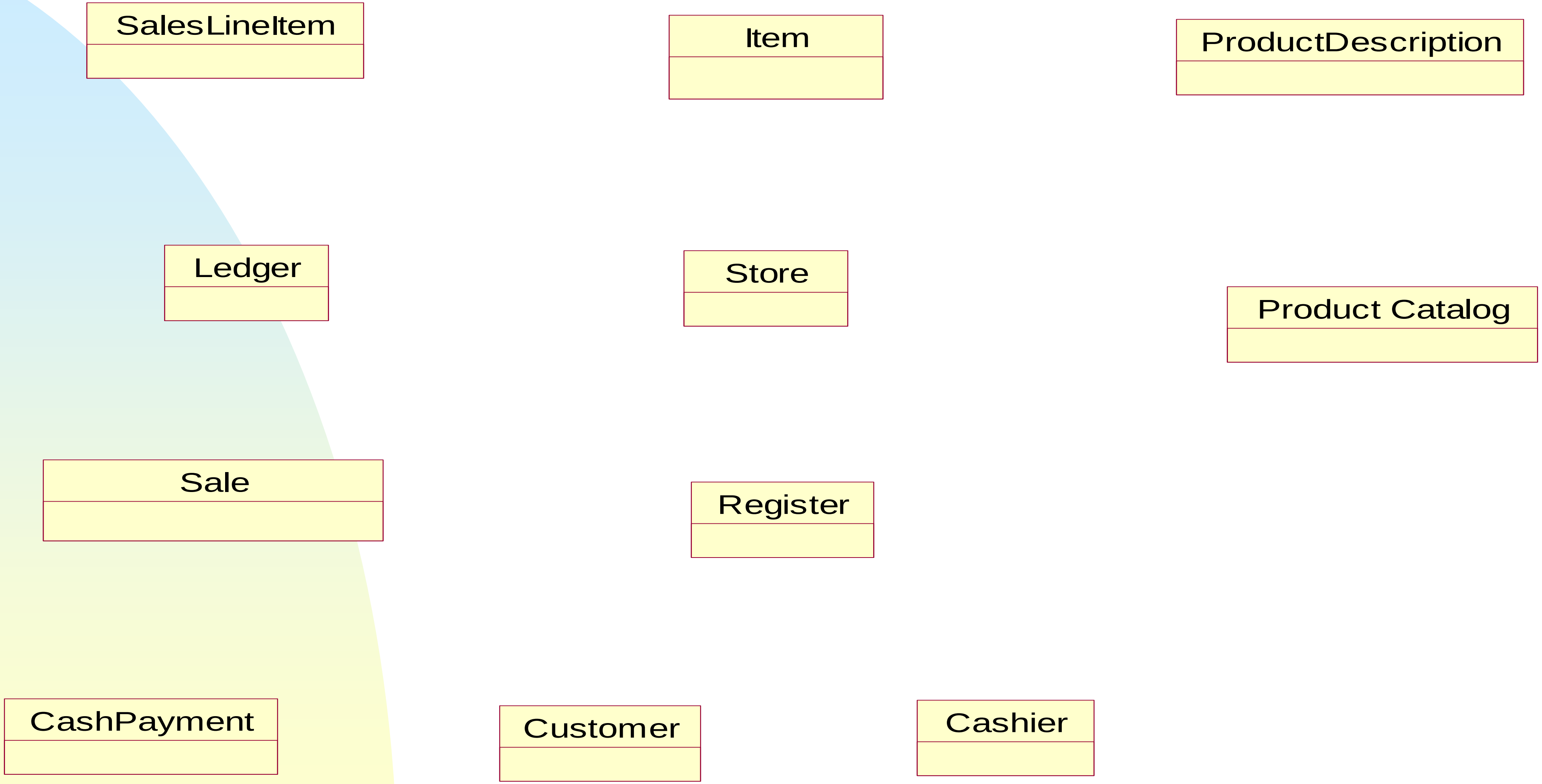
Sale , Cashier , CashPayment, Customer
SalesLineItem , Store, Item, ProductDescription,
Register, ProductCatalog, Ledger

## Step2: Association

## Step3: Attribute

- **Remember design will change things if needed**

# 3.3 POS Example: Create Domain Model



SalesLineItem

Item

ProductDescription

Ledger

Store

Product Catalog

Sale

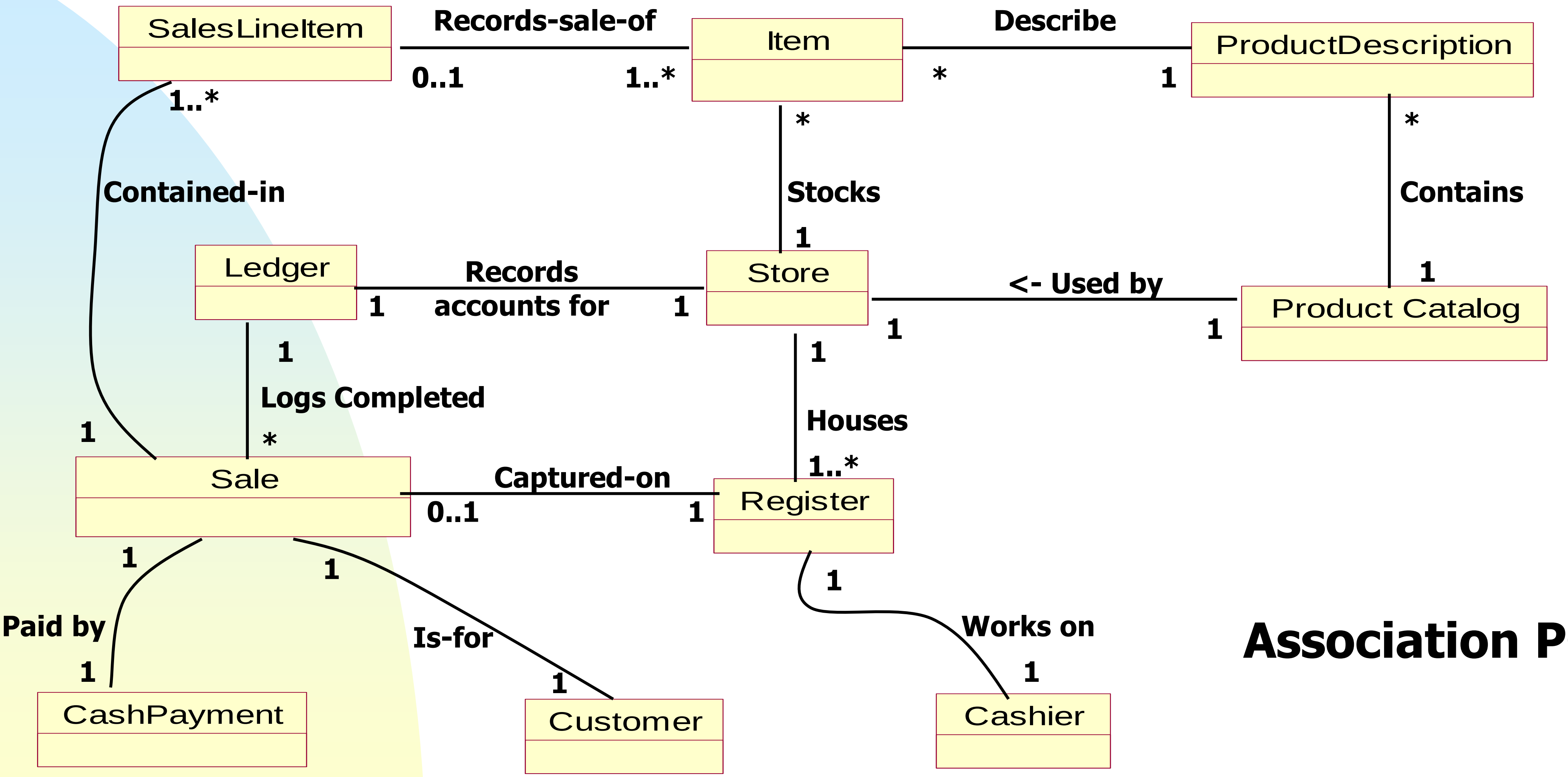
Register

CashPayment

Customer

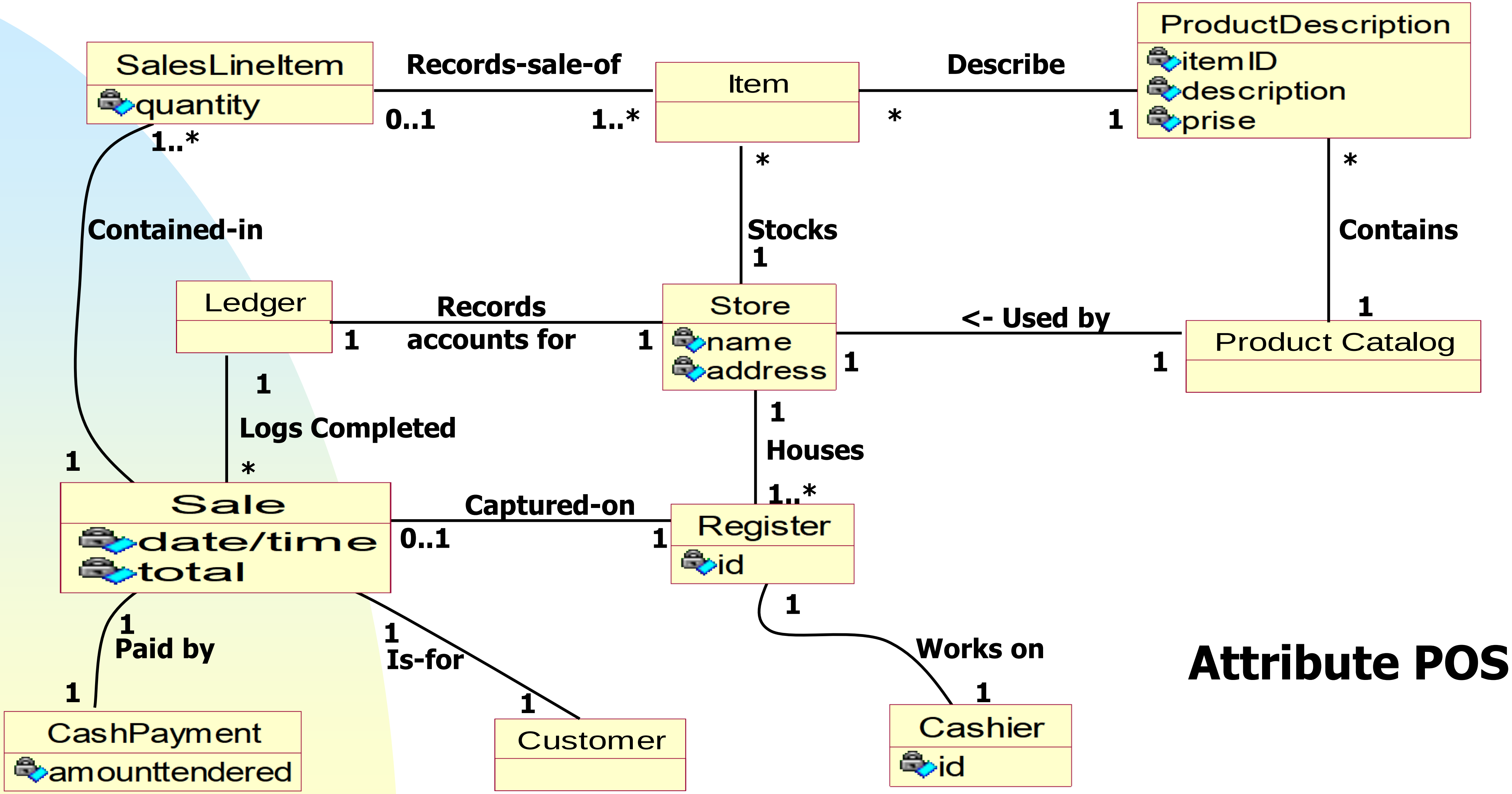
Cashier

# 3.3 POS Example: Create Domain Model



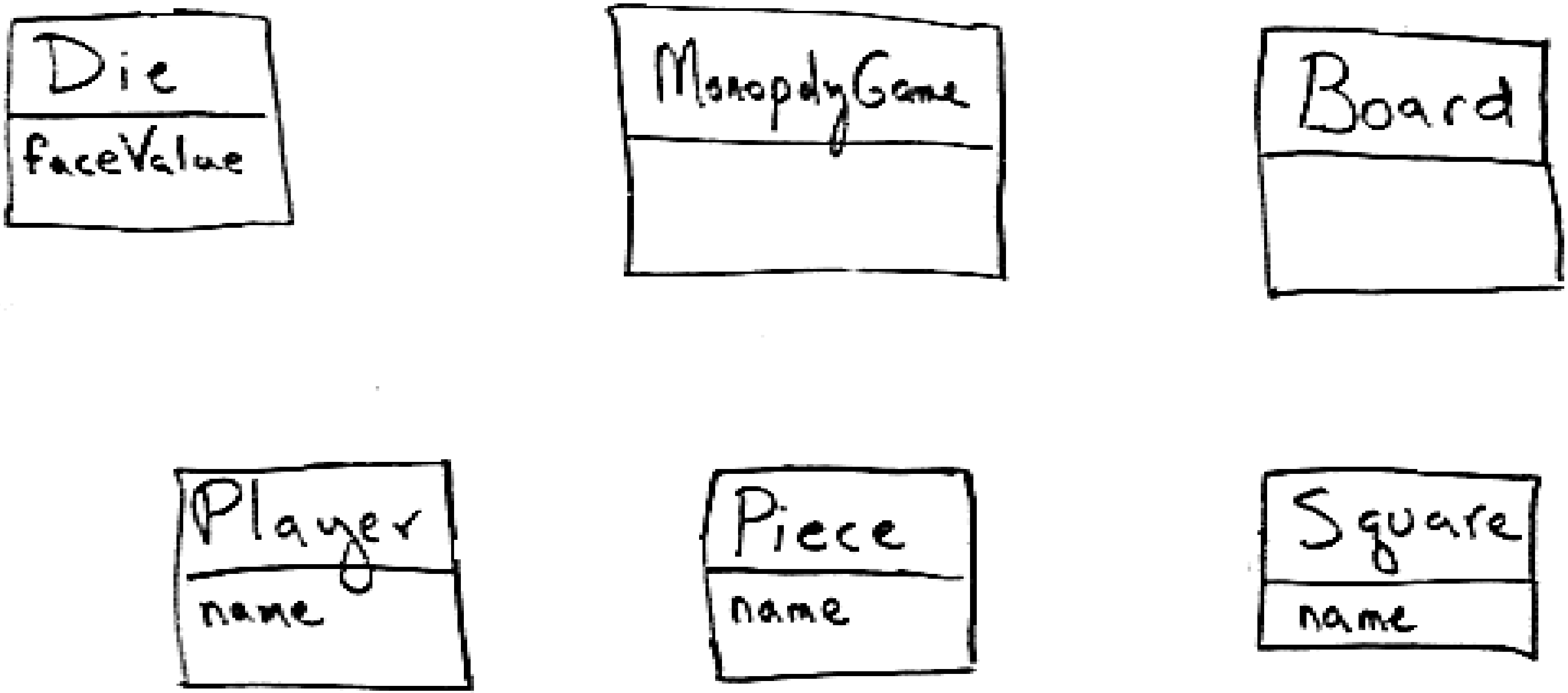
**Association POS**

# 3.3 POS Example: Create Domain Model

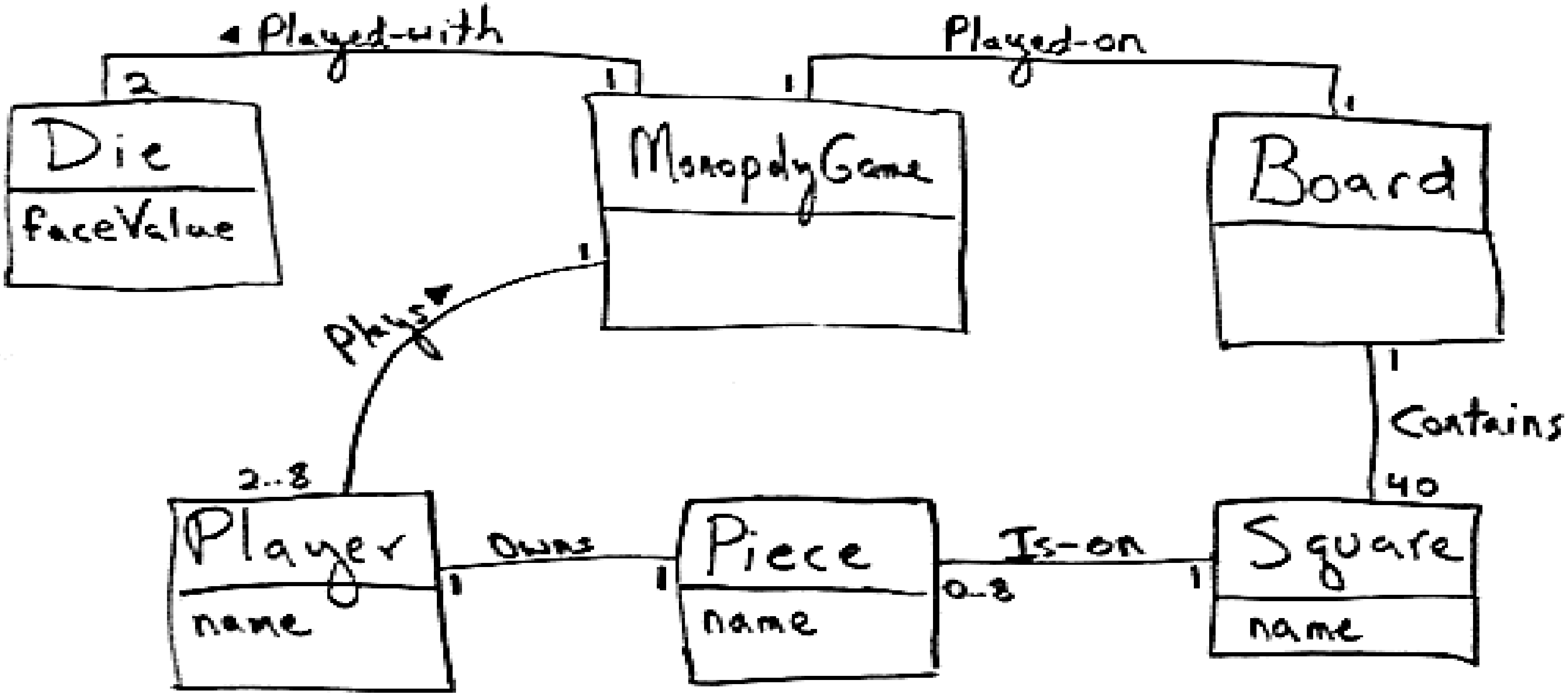


Attribute POS

# 3.4 Monopoly Game： Create Domain Model



# 3.4 Monopoly Game： Create Domain Model



**Die: faceValue, after rolling the dice, needed to calculate the distance of a move**
**Square: name , to print the desired trace output**

# Associations (review)

- Relationships between classes
  - Association has a name, (may with direction)
  - Some rules
    - A is contained in or on B: “ Board Contains Square”
    - A owns B: “ Players Owns Piece”
    - A is known in/on B: “ Piece Is-on Square”
    - A is member of B: “ Player Member-of (or Plays) MonopolyGame”
  - Multiplicity
    - How many objects participate
  - Role
    - Names for the roles of the two classe/objects
    - Navigability
      - How one object will find the other object to send a message
  - 复习：What is link?

- **本讲结束**