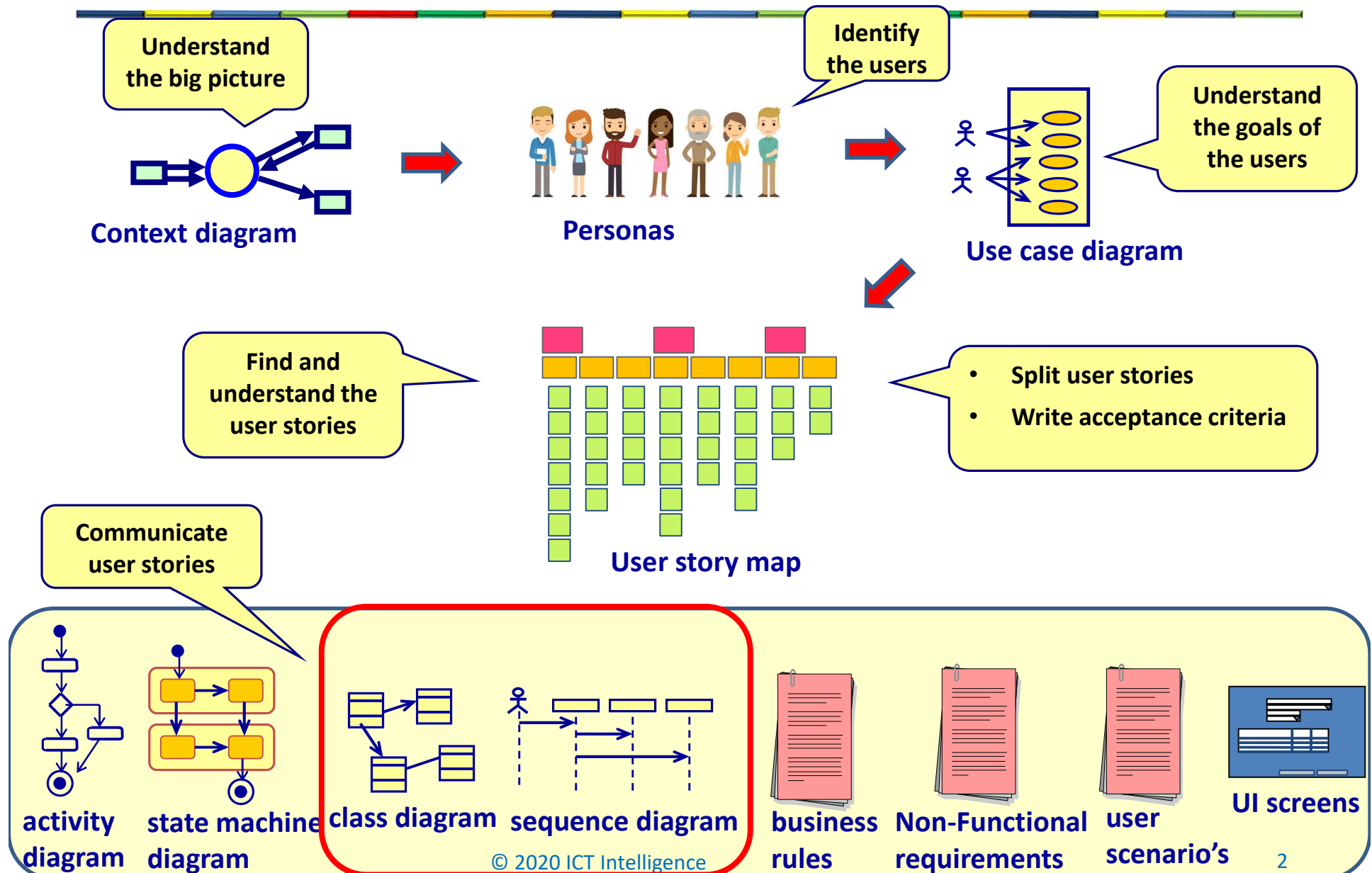
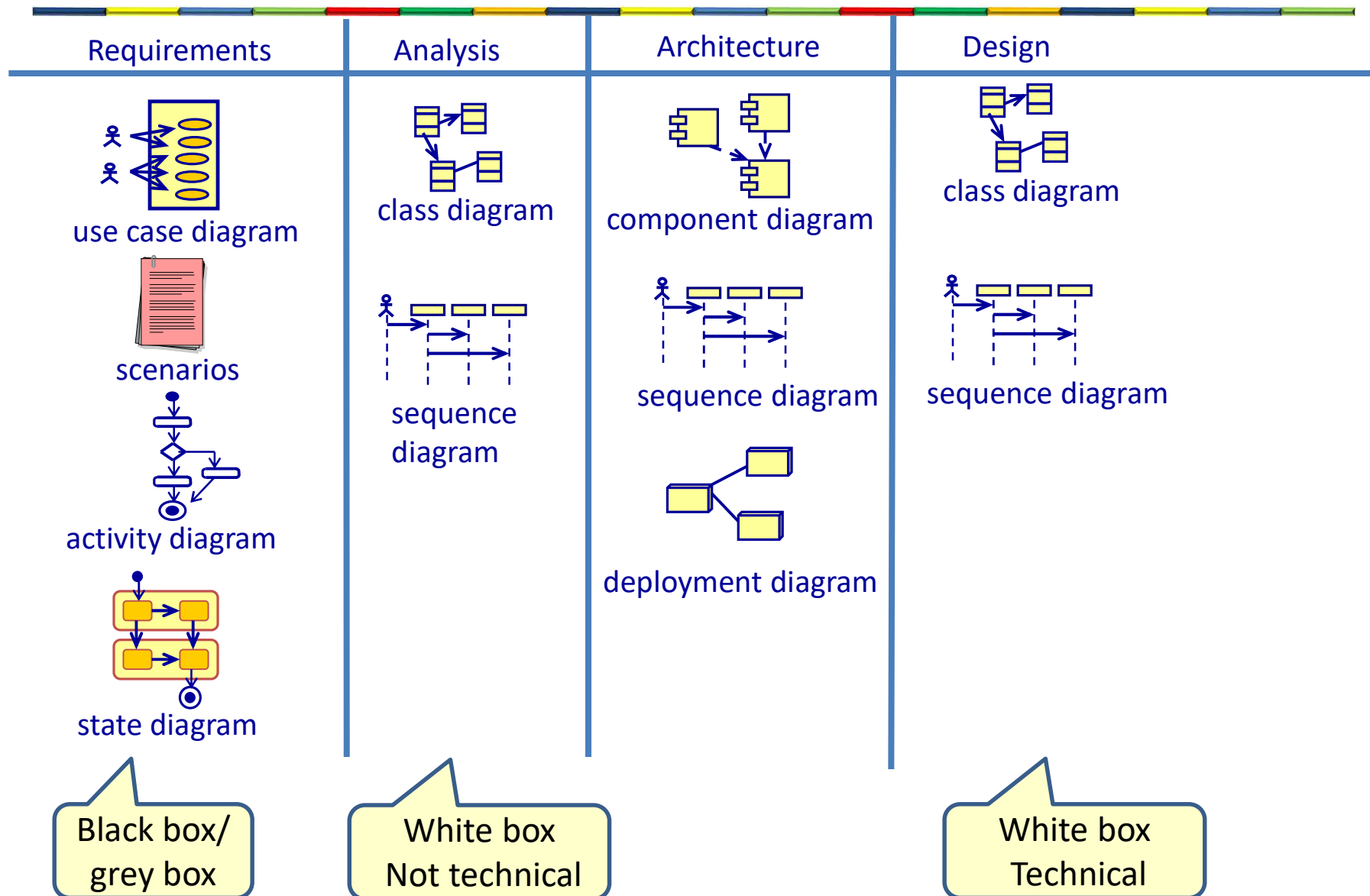


Lesson 6

Analysis

Agile requirements





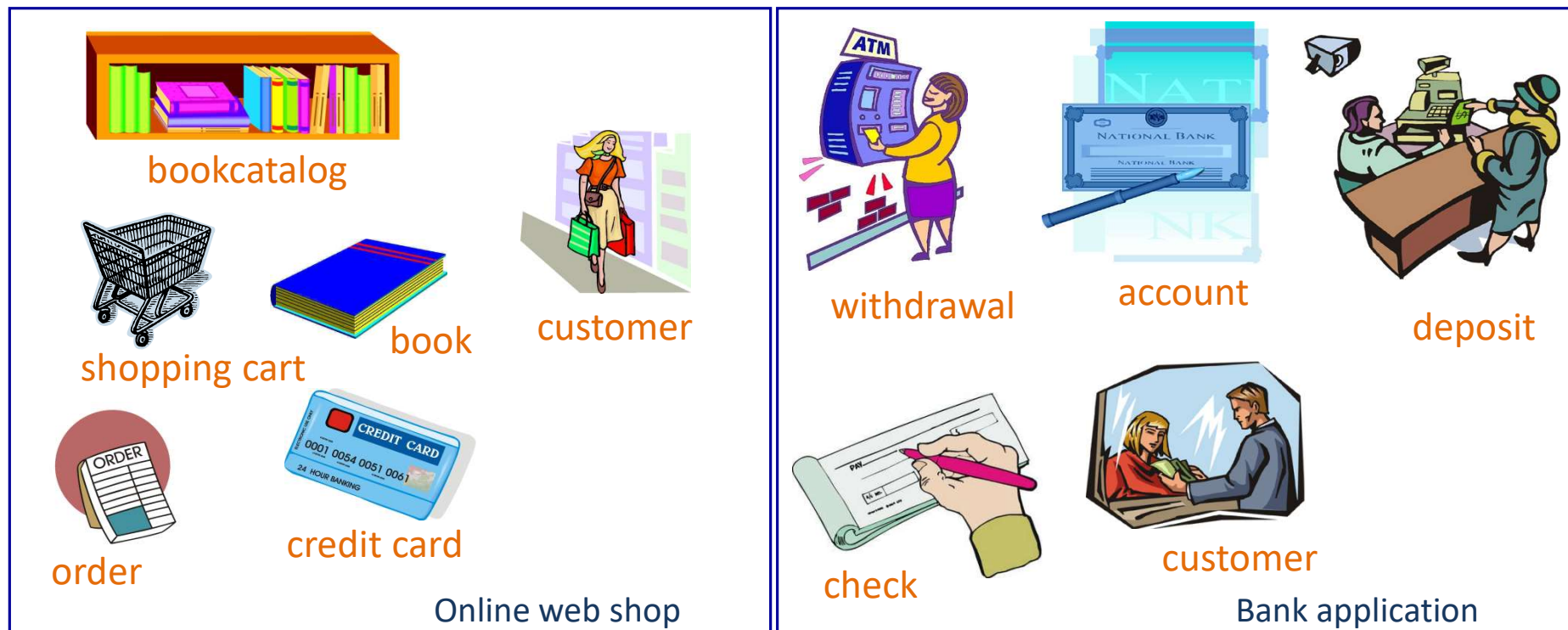
Analysis

Analysis model



- Structure of the domain model
 - Objects: class diagram
- Behavior of the domain model
 - Sequence diagram
 - Communication diagram (not much used)

Entity objects in the problem domain



OO concepts



- Object
- Behavior, state and identity
- Relations
- Class
- Inheritance
- Polymorphism

Object

- An object is a concept or a thing in the problem domain



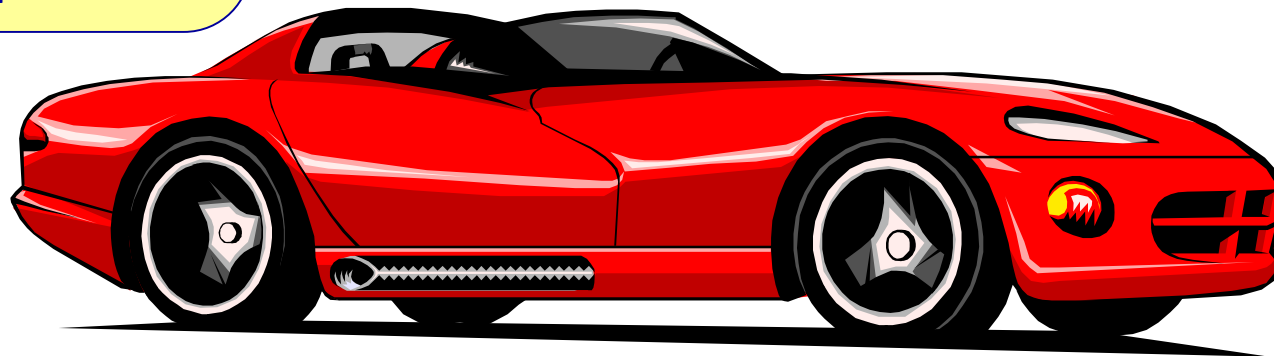
An object has

Data

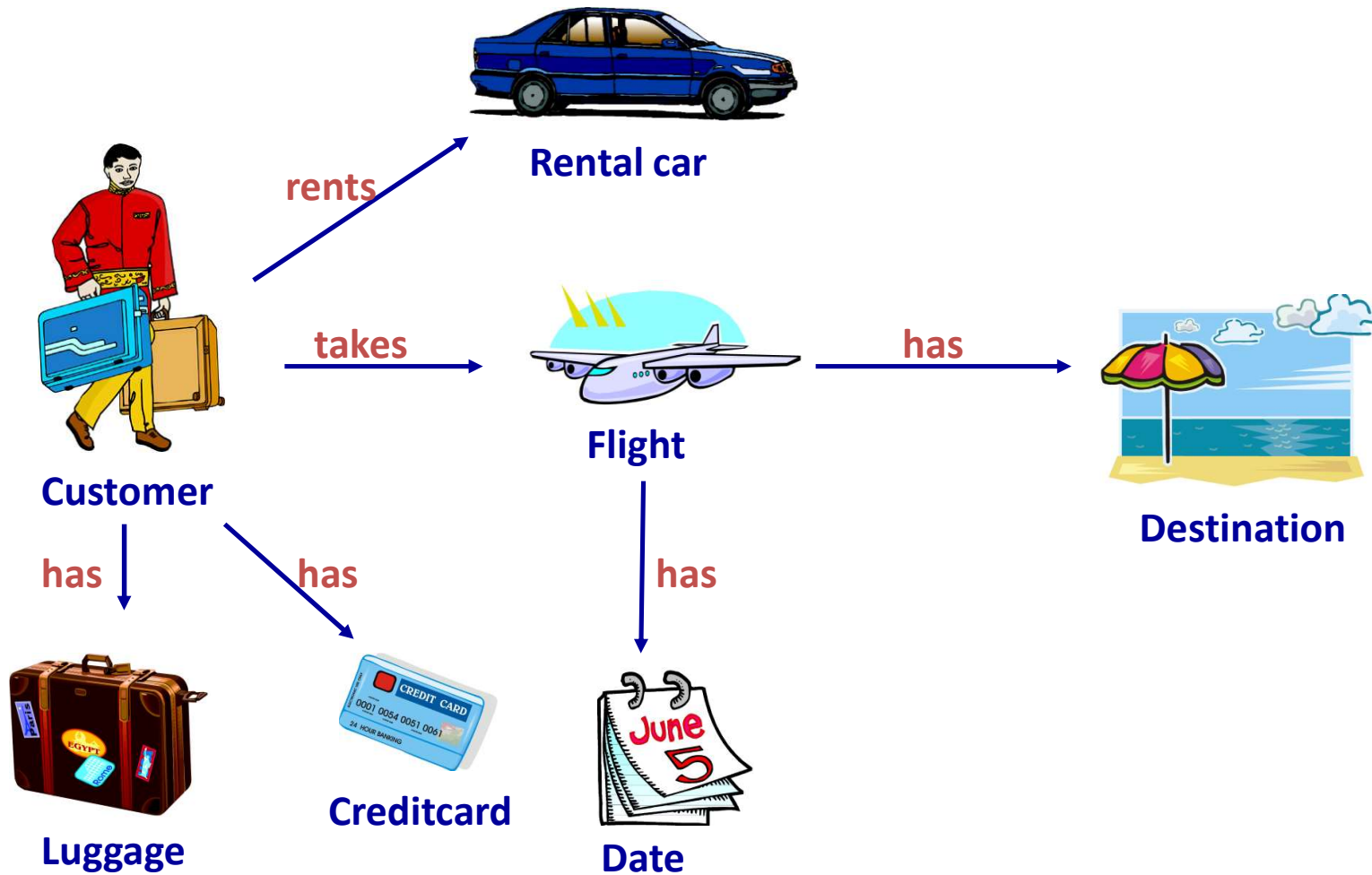
- Color: red
- Price: \$12000
- Year: 2001

Behavior

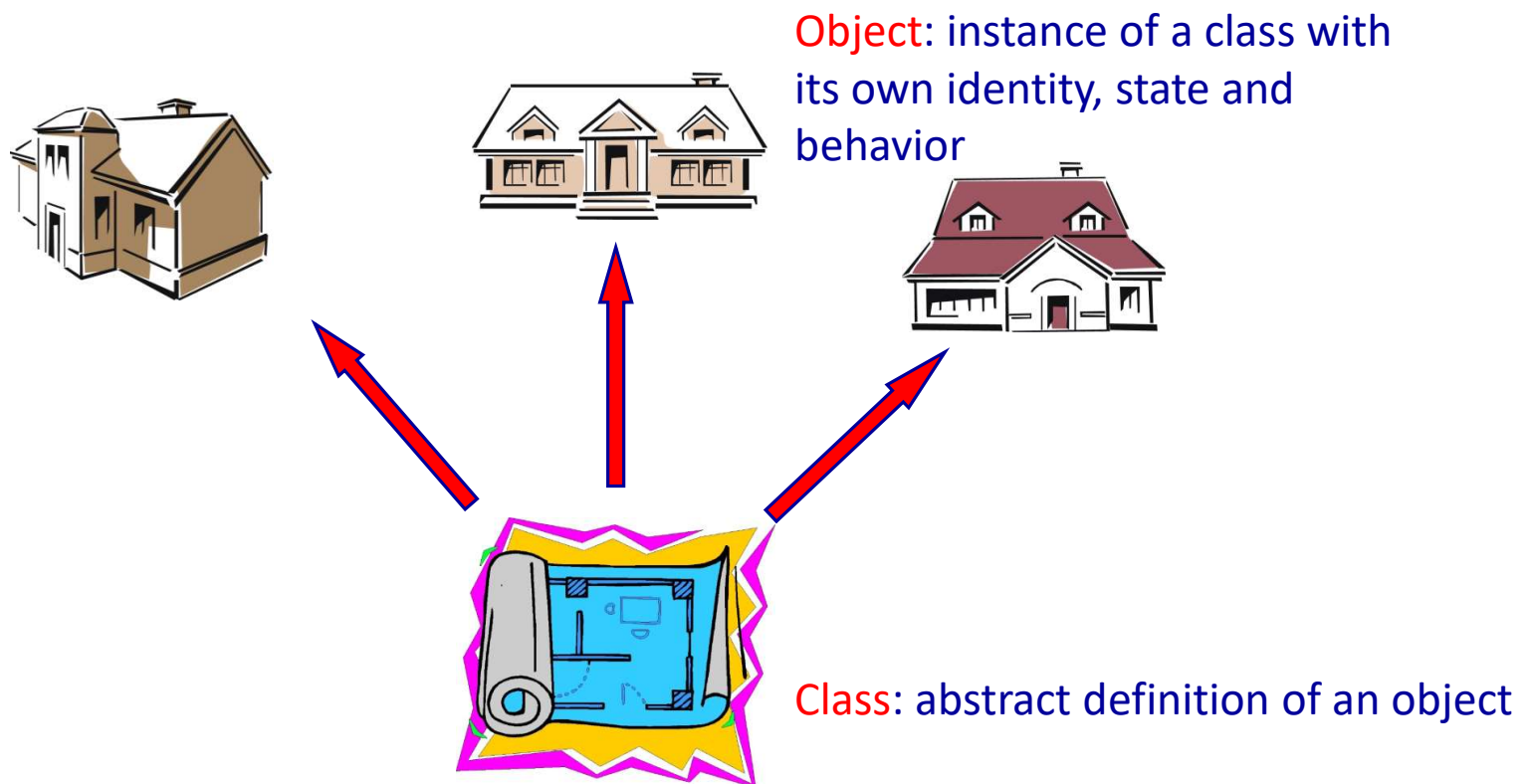
- Drive
- Brake
- Turn
- Increase speed
- Decrease speed



Object relations

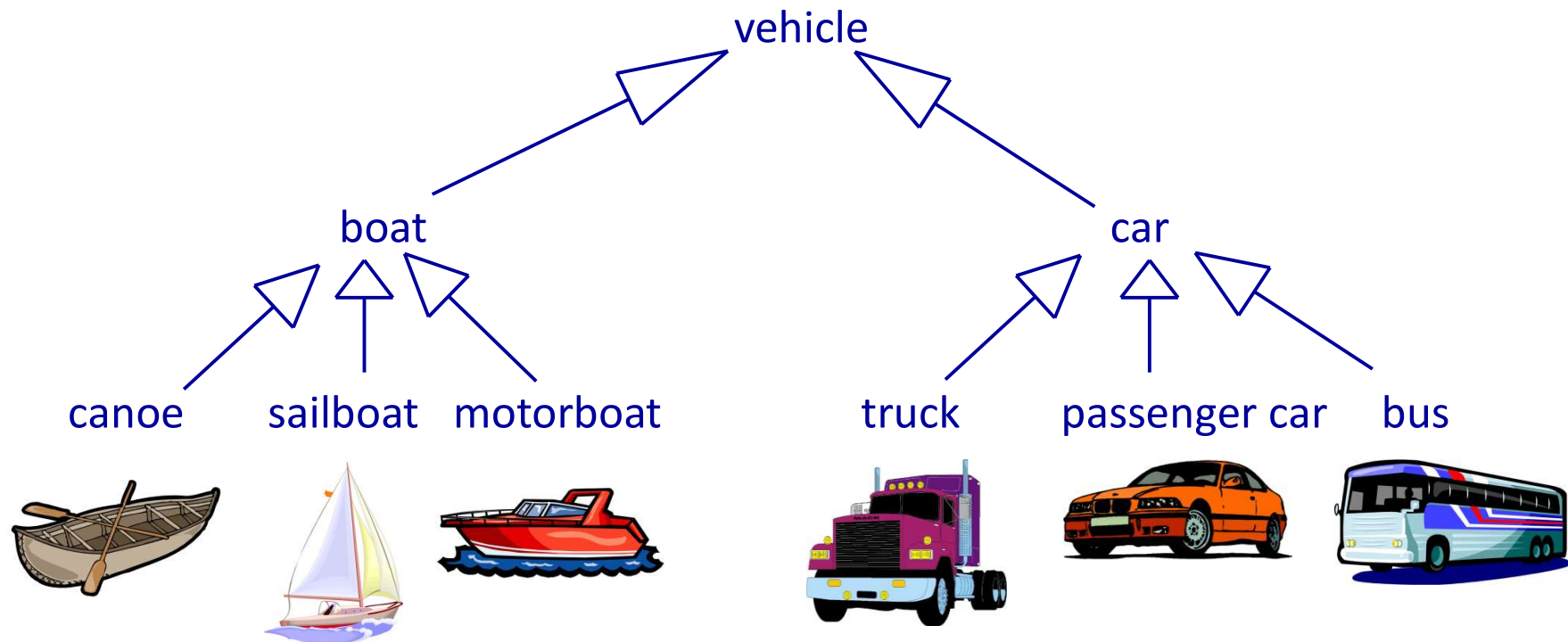


Class



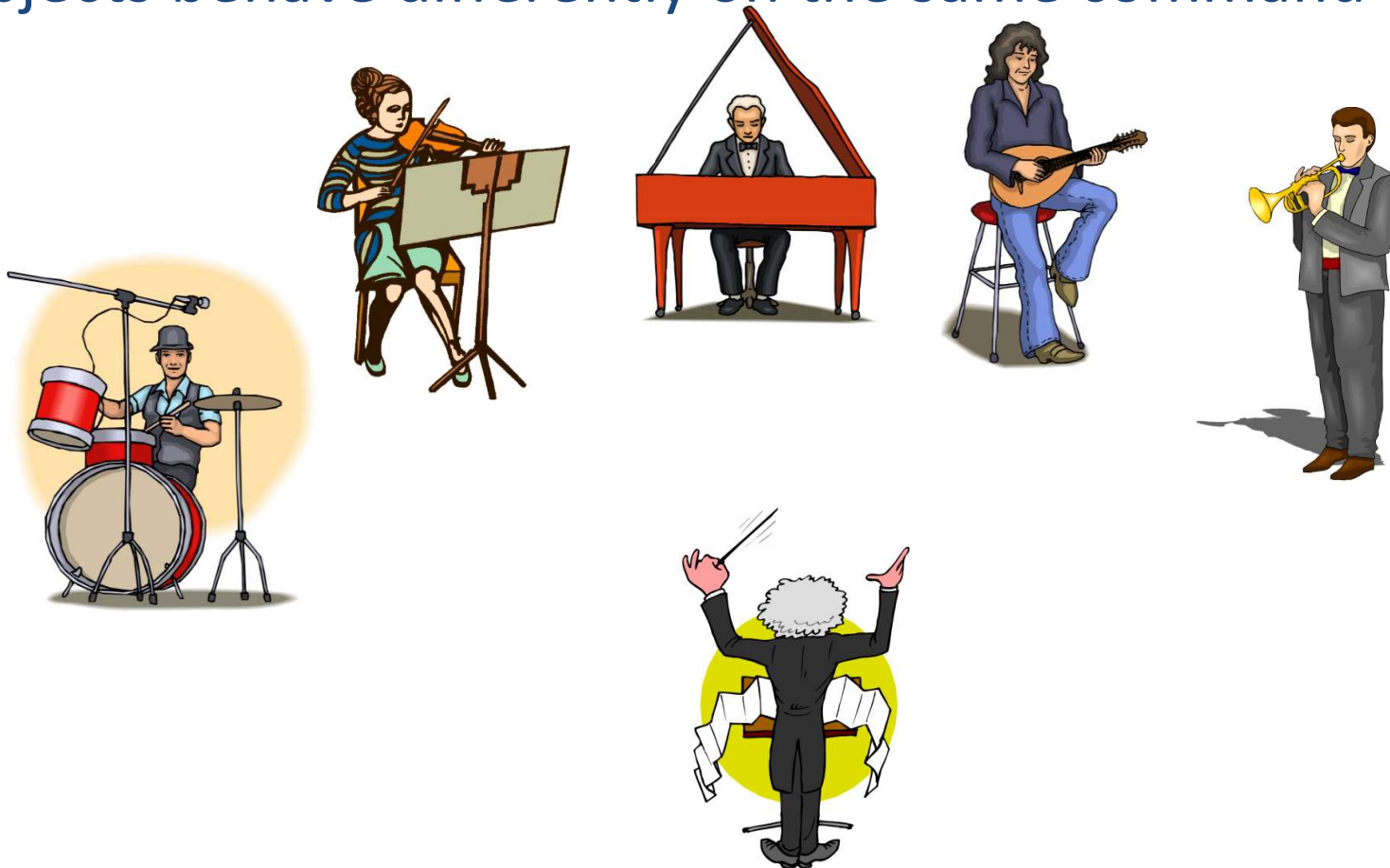
Inheritance

- Is-a relationship between generic and specific classes



Polymorphism

- Polymorphism = many forms
- Objects behave differently on the same command



The virtual world of objects



- Software objects can do anything
 - A product can sell itself
 - A mortgage can compute its monthly payment
 - A shoppingcart can check itself out

Characteristics of objects

- Objects are real world entities or concepts in the problem domain.
- Objects are small.
- Objects can do one thing very well, all other things are delegated to other objects.
- Objects
 - Know things (attributes)
 - Can do things (methods)

Finding classes



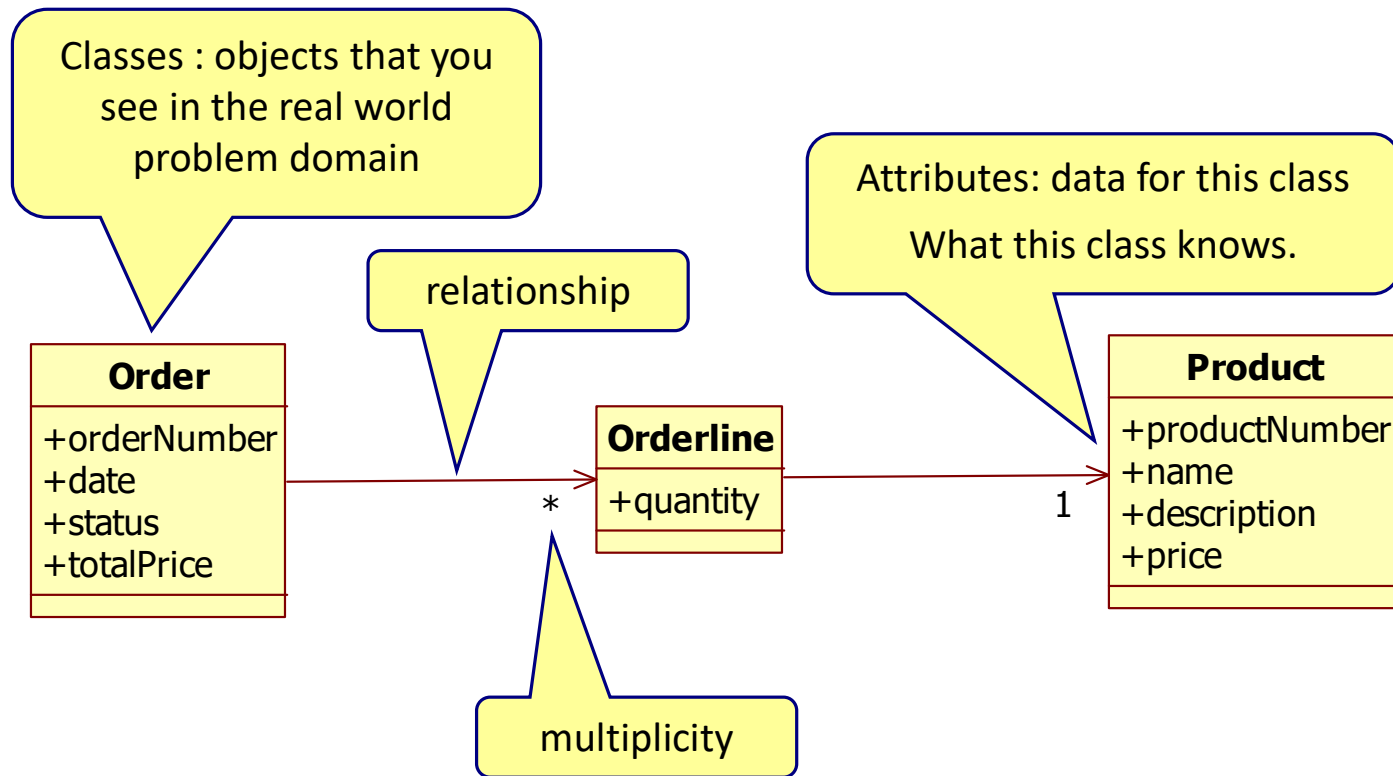
- Identify the things and concepts in the problem domain
- Noun/verb analysis
 - Nouns become classes or attributes
 - Verbs become methods

Exercise



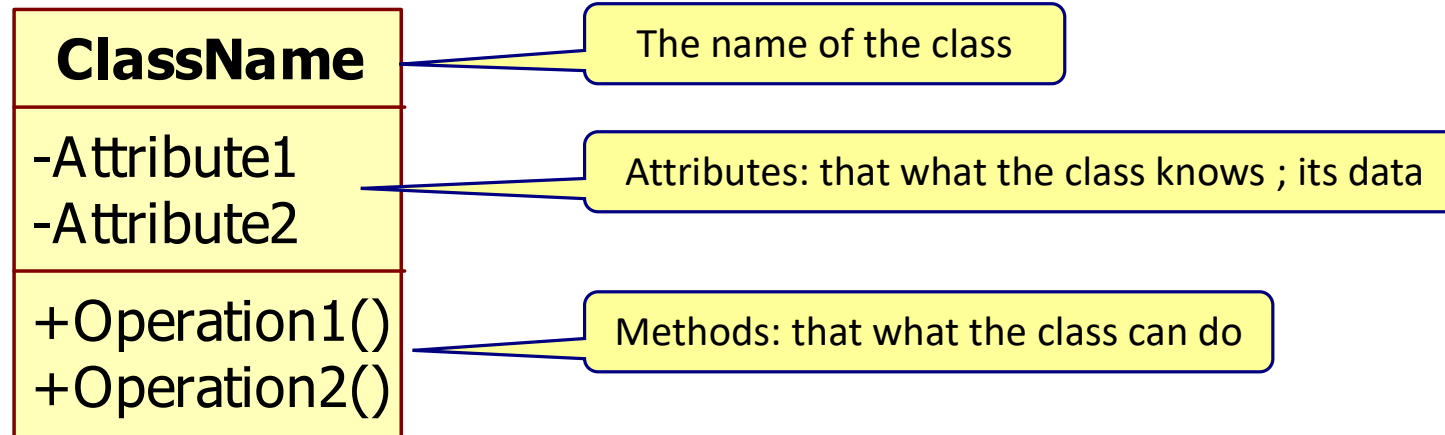
Domain model class diagram

UML class diagram elements



Describes the structure of a system by showing the classes, their attributes, and the relationships

Class

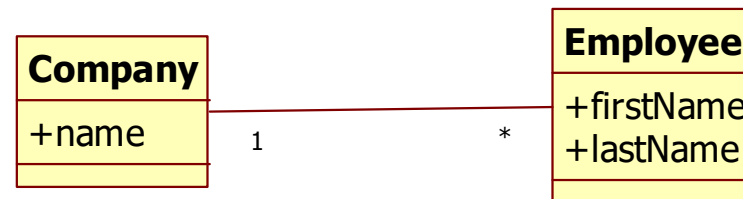


Car
+licenceNumber +brand +type +year +color
+drive() +turnLeft() +turnRight() +break()

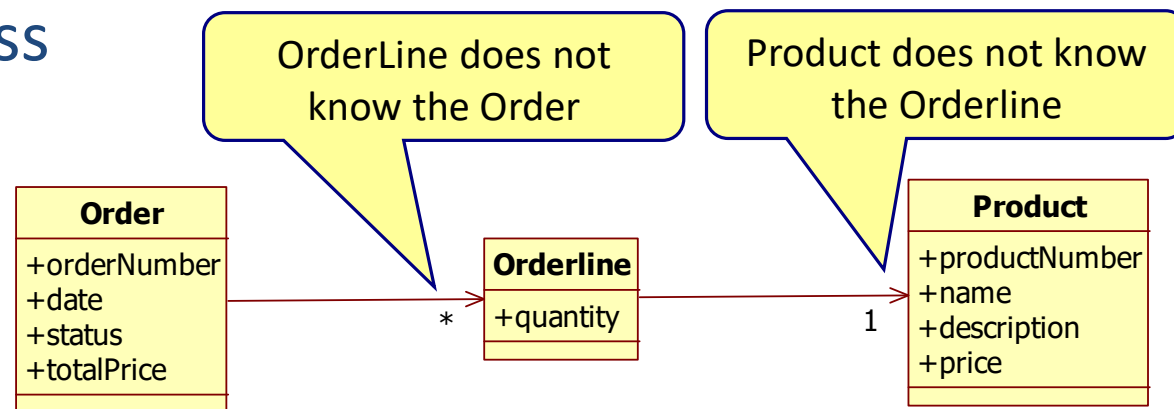
Address
+street +city +zip +country
+computeDistance()

Association

- Defines the relationship between 2 classes
 - Bi-directional: both classes are aware of each other

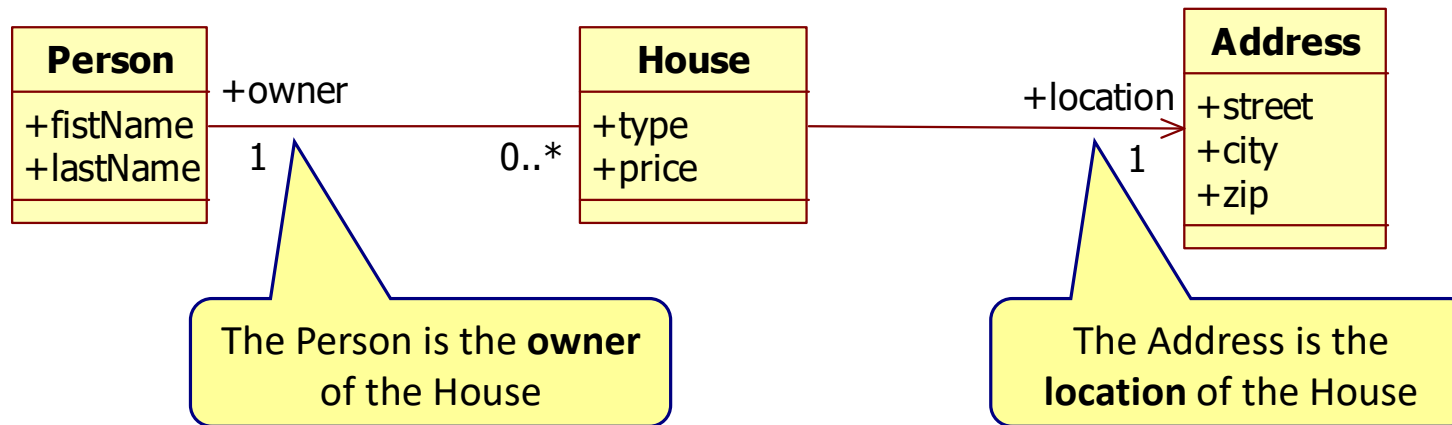


- Uni-directional: only one class is aware of the other class



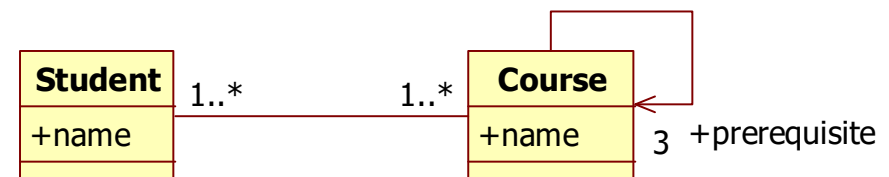
Association Role

- Indicates the role played by the class attached to the end of the association path



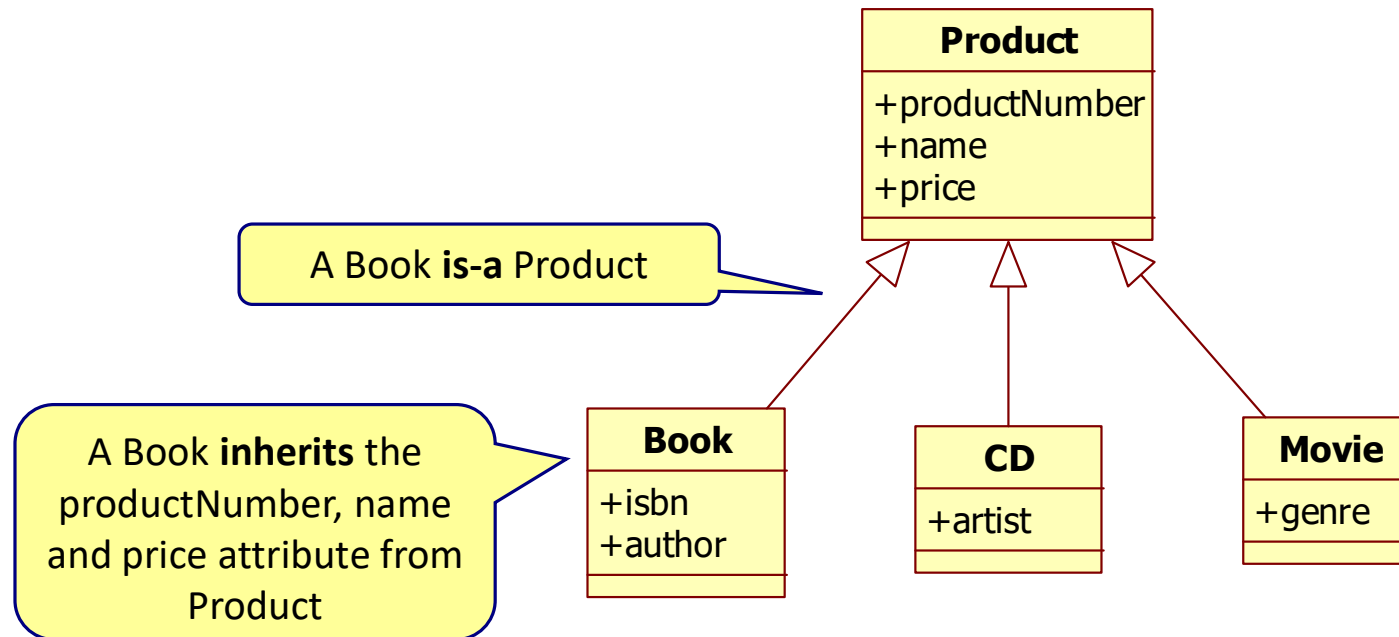
Multiplicity

- 0
 - 1
 - 0..1
 - 0..*
 - 1..*
 - *
 - 7
 - 5..7
 - 2,4
- Zero or one
- Zero or more
- One or more
- Zero or more
- Specified range
- Two or four



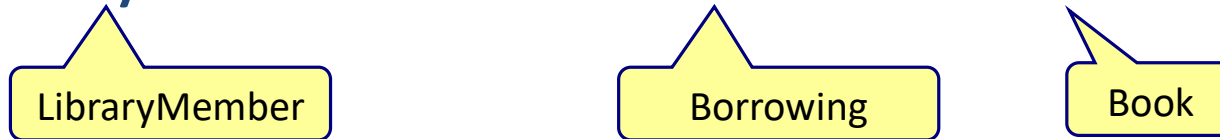
Inheritance

- Is-a relationship

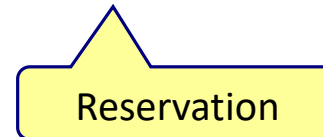


Finding classes

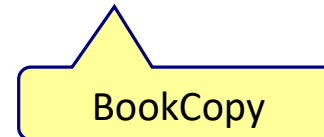
- Library members can borrow books



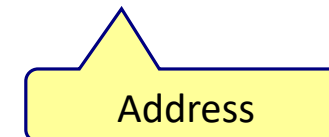
- Library members can reserve books



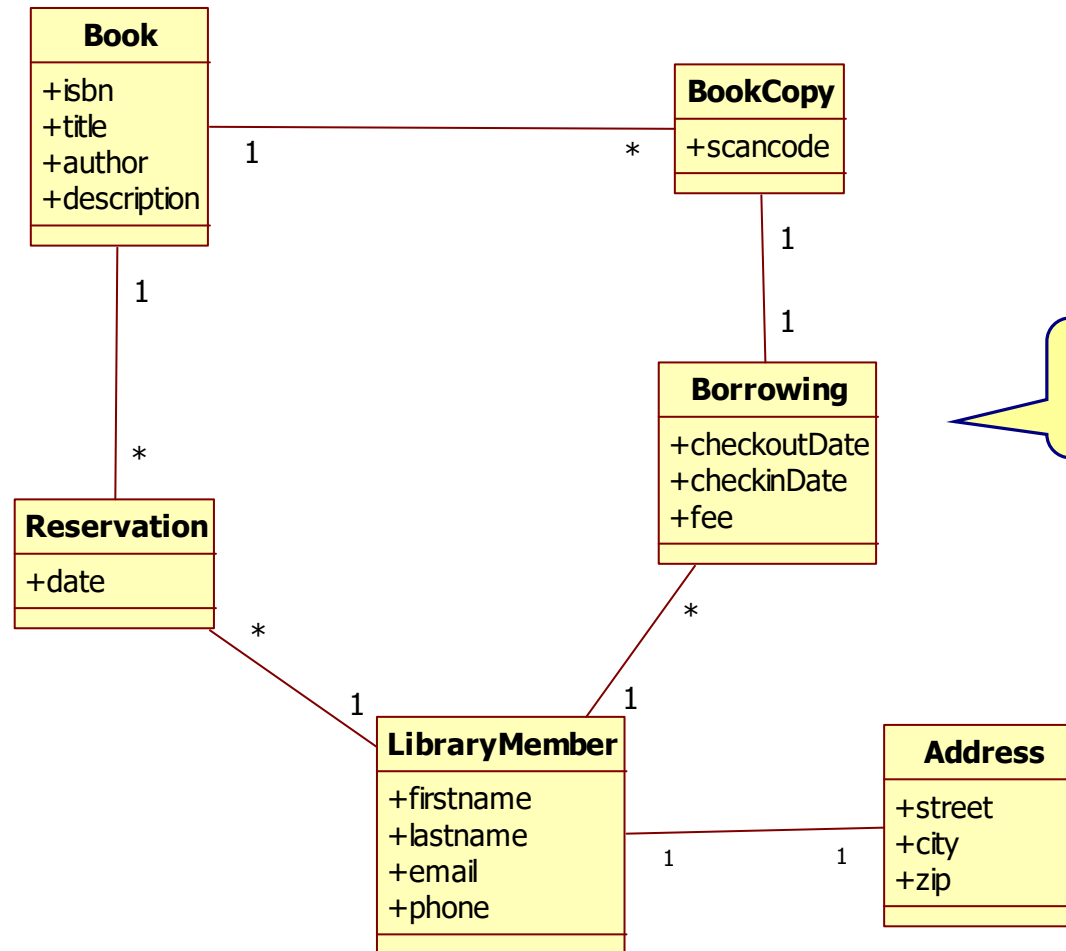
- We can have multiple copies of one book



- Library members live at a certain address

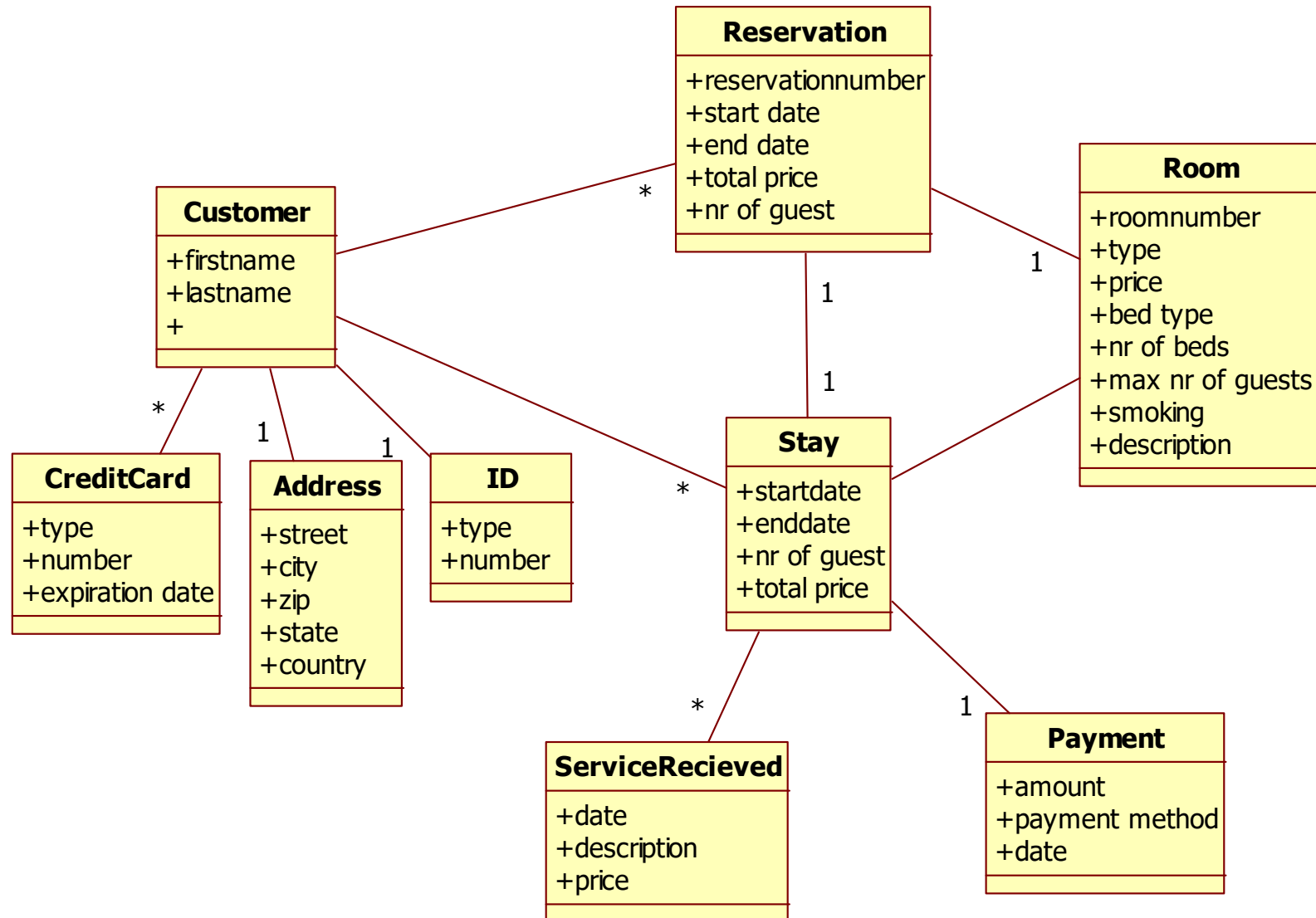


Library system domain model



No methods in domain model

Hotel reservation system



Main point



Software engineering

The domain model shows the entities, attributes and relationships of the problem domain

SCI

The human physiology has the same structure as the structure of the Veda and Vedic literature who are expressions of the structure of pure consciousness.