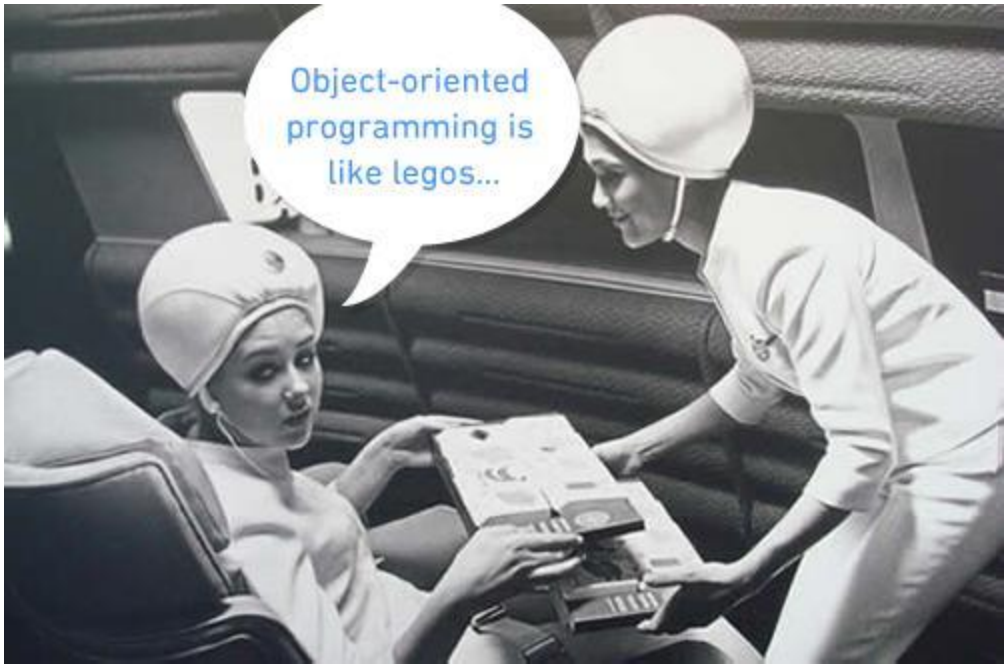
Object-oriented world model

Home task from previous lesson

Did you have some difficulties during hometask?



Abstraction

Abstraction methods

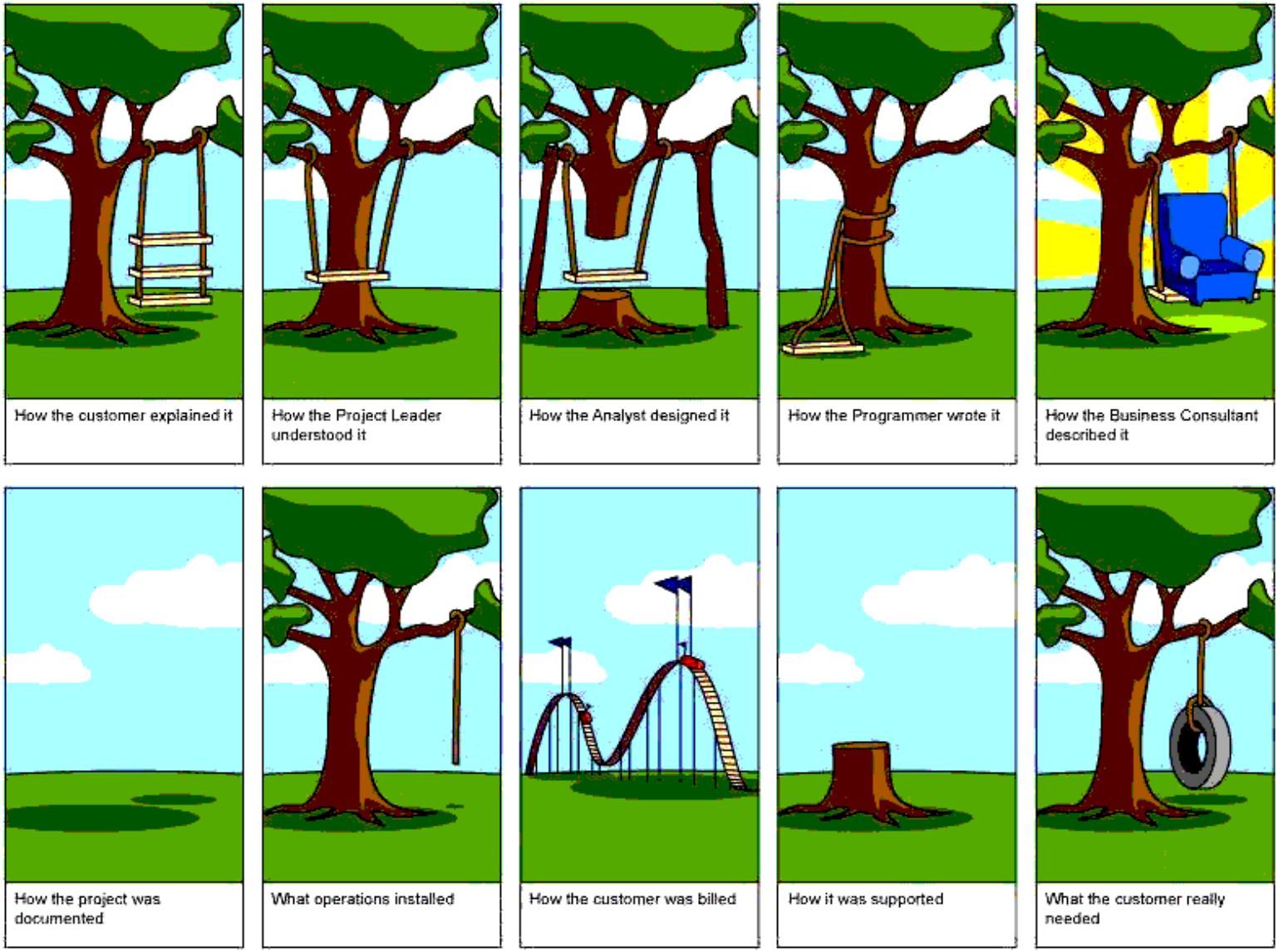
- Parametrization
- Specification

Parametrization

$$\mathrm{f}(x) = \sin(x)$$

$$\mathrm{f}\left(\frac{\pi}{6}\right) = \sin\left(\frac{\pi}{6}\right) = \frac{1}{2}$$

Specification



Object Oriented Programming

OOP is a programming paradigm, based on presenting *anything as an object*.

Anything that we could see or touch, or interact with in real world could be described as object.

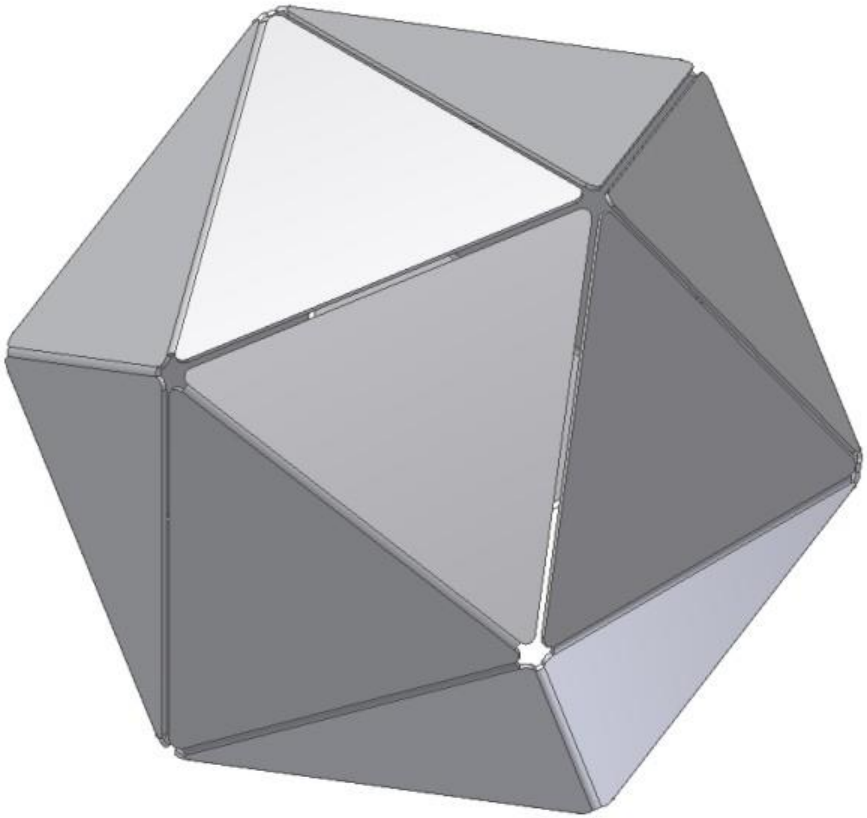
Model

2 basic terms:

- Object
- Relationship

What is more important?

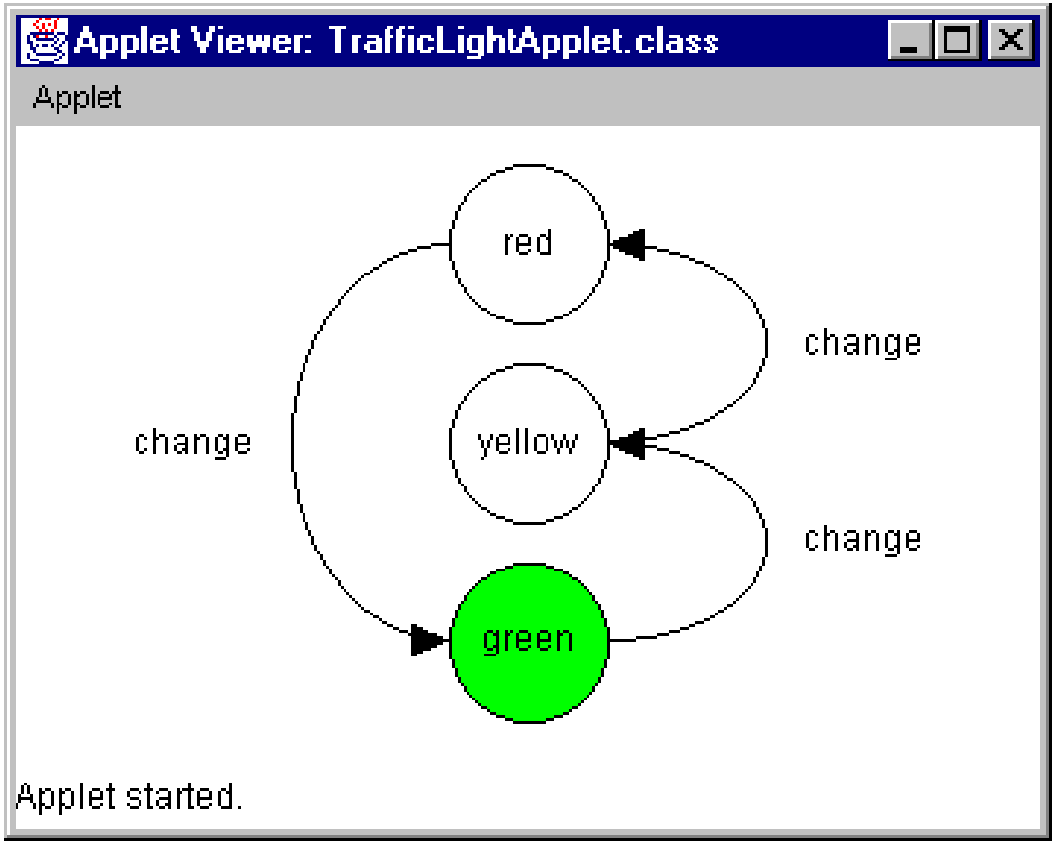
Object



Characteristics

- State
- Behavior
- Identity

State

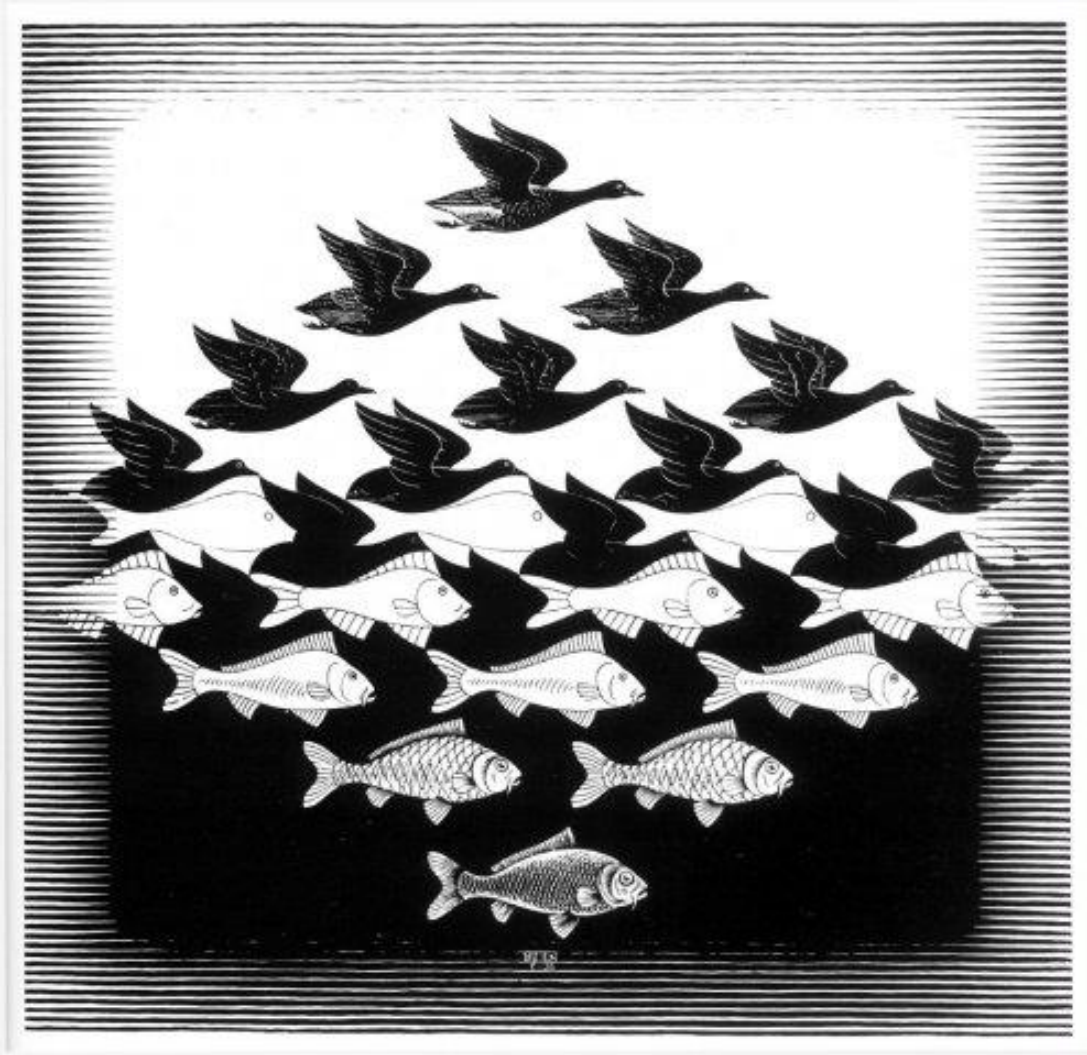

Applet Viewer: TrafficLightApplet.class
Applet
red
change
yellow
change
change
green
Applet started.

Behavior

Method types

- Setter
- Getter
- Iterator
- Constructor
- Destructor

Identity



Class

UML basics. Class diagram

Unified Modeling Language (UML)

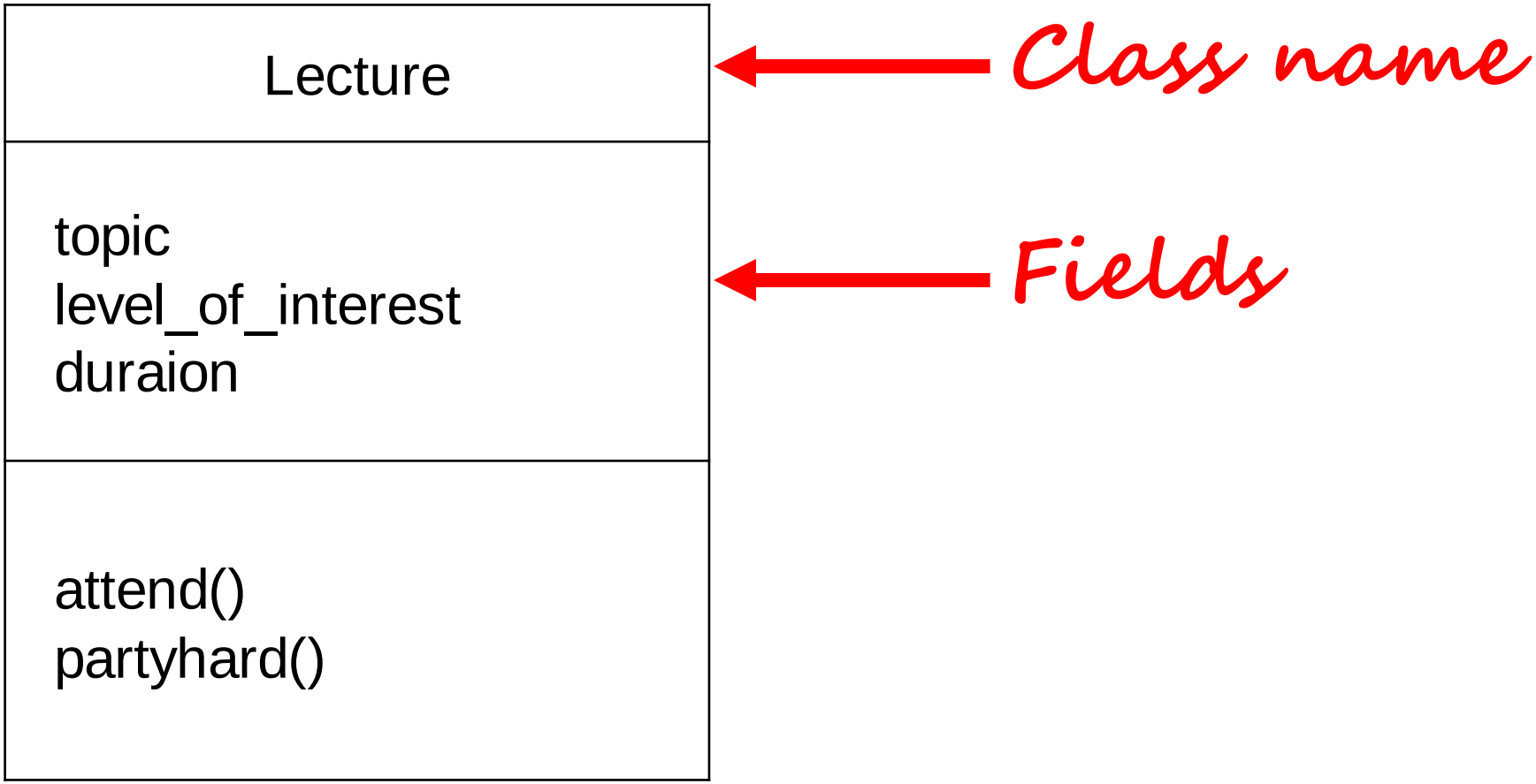
Lecture
topic level_of_interest duraion
attend() partyhard()

Unified Modeling Language (UML)

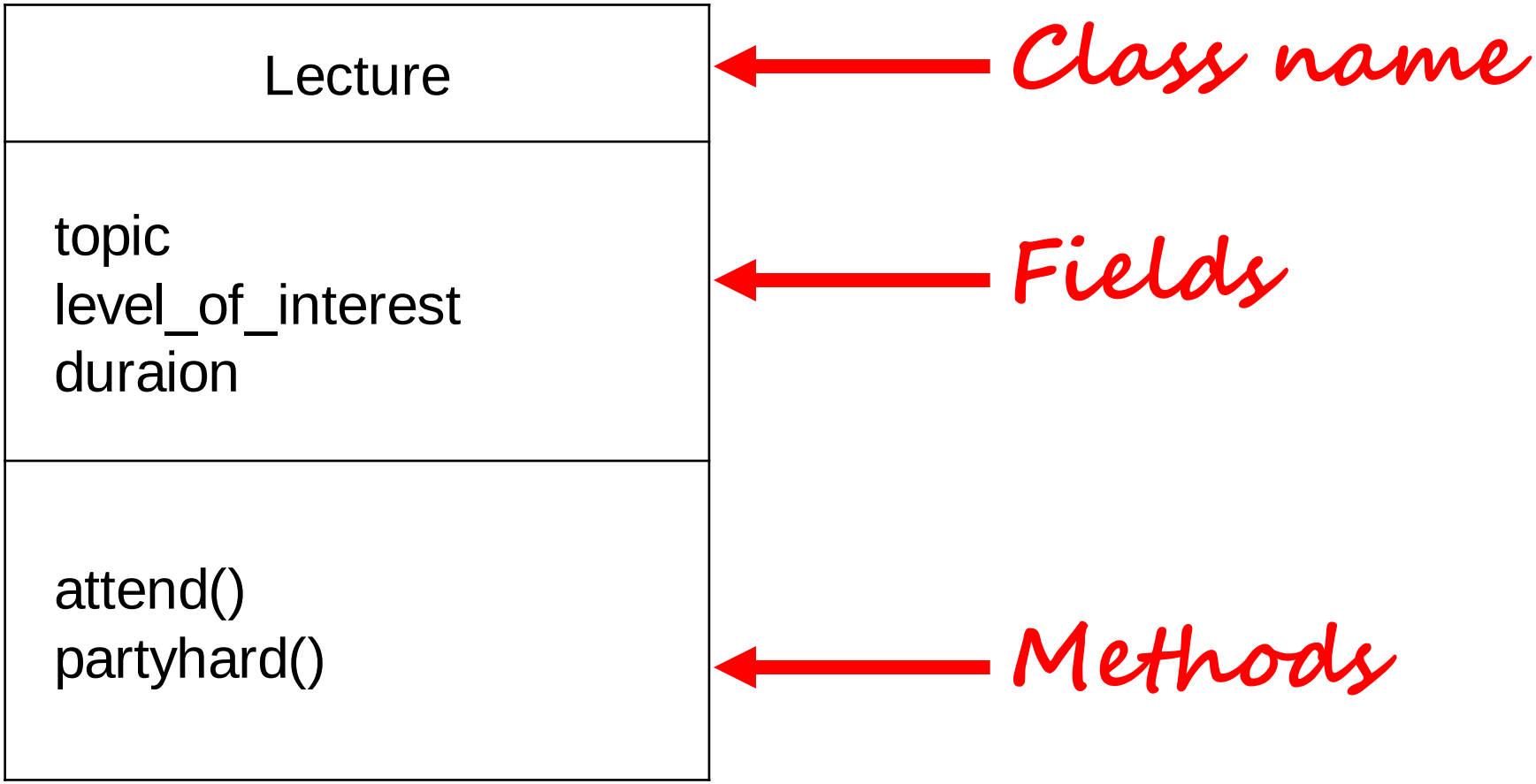
Lecture
topic level_of_interest duraion
attend() partyhard()

Class name

Unified Modeling Language (UML)



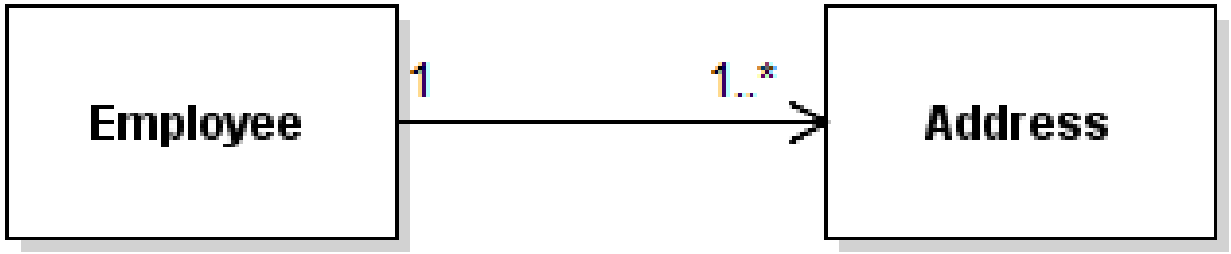
Unified Modeling Language (UML)



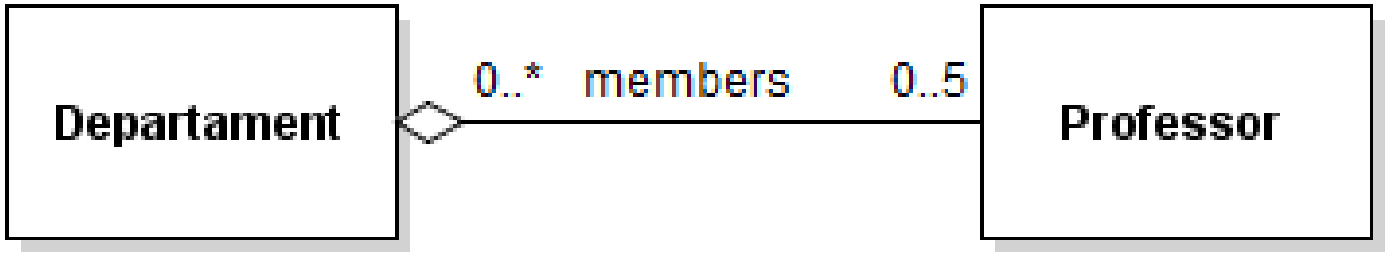
Relationships

- Association
- Aggregation
- Composition
- Inheritance
- Usage
- Implementation
- Parametrization
- Meta-class

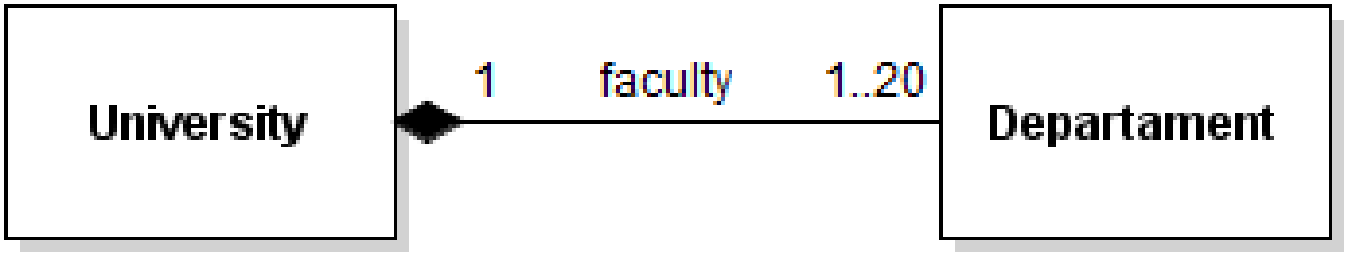
Association



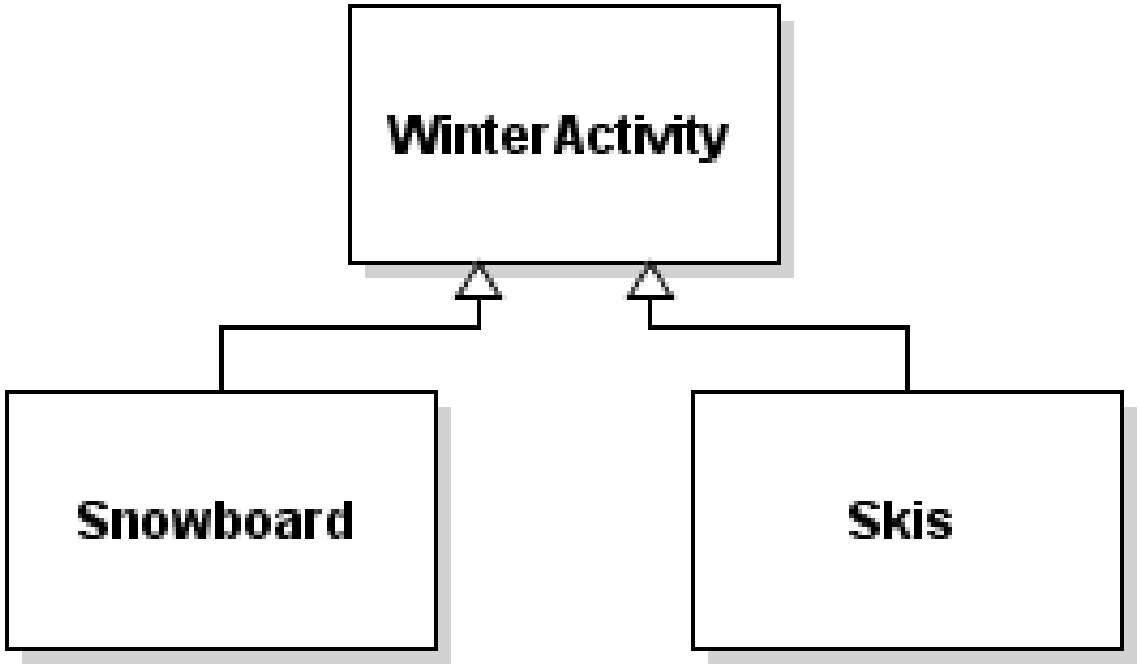
Aggregation



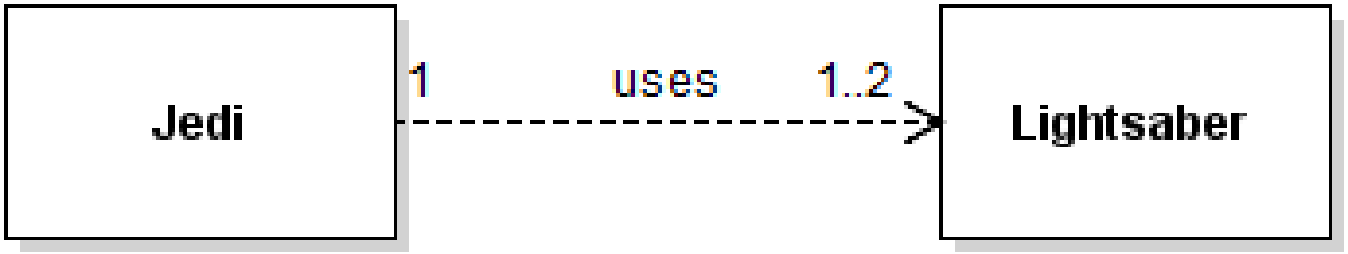
Composition



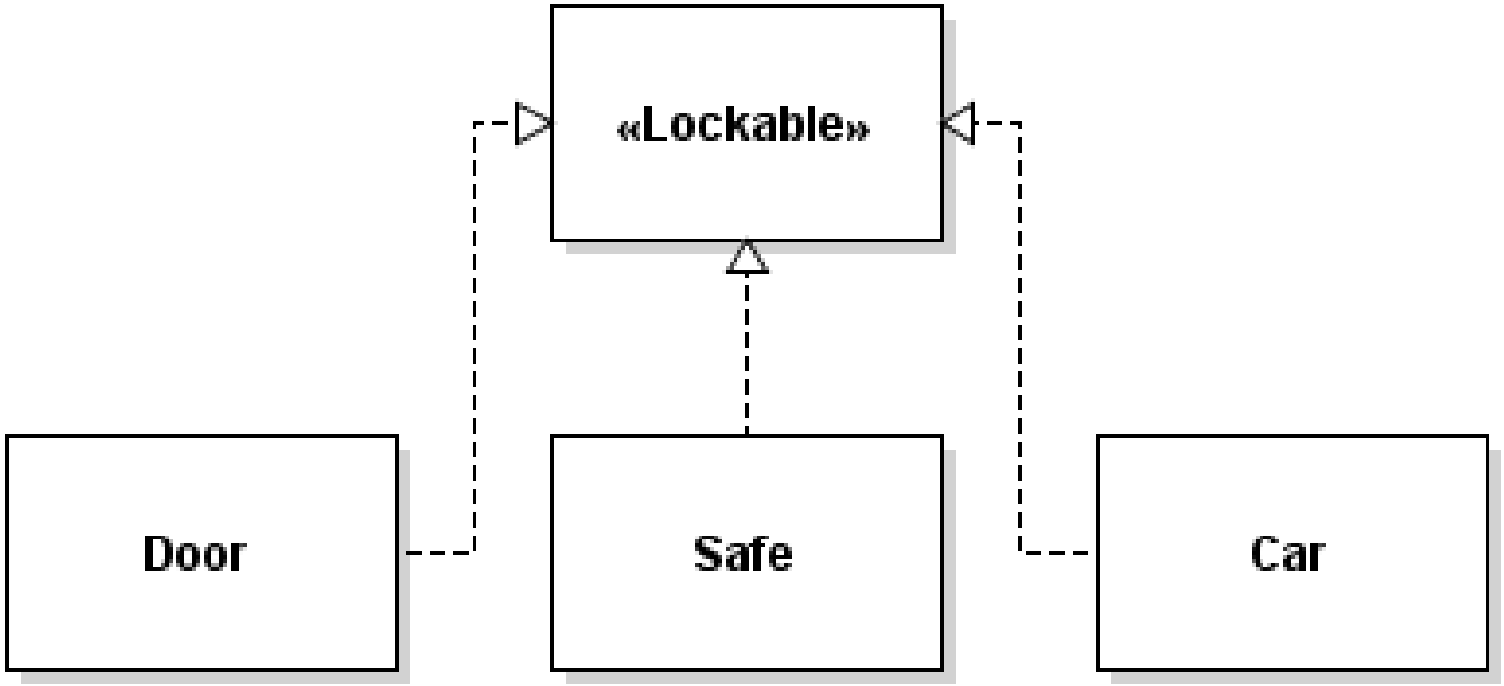
Inheritance (Generalization)



Usage



Implementation

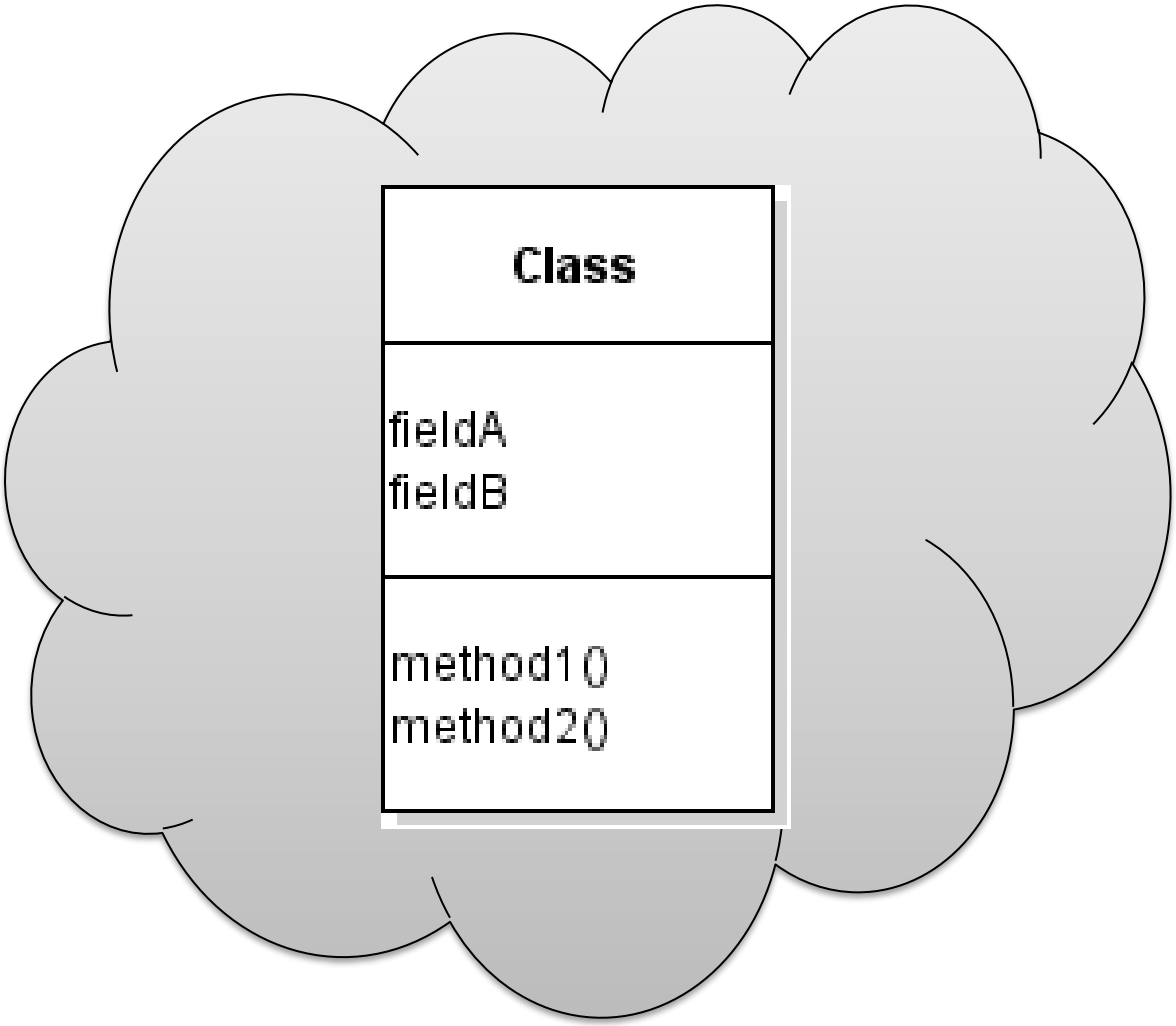


Parametrization

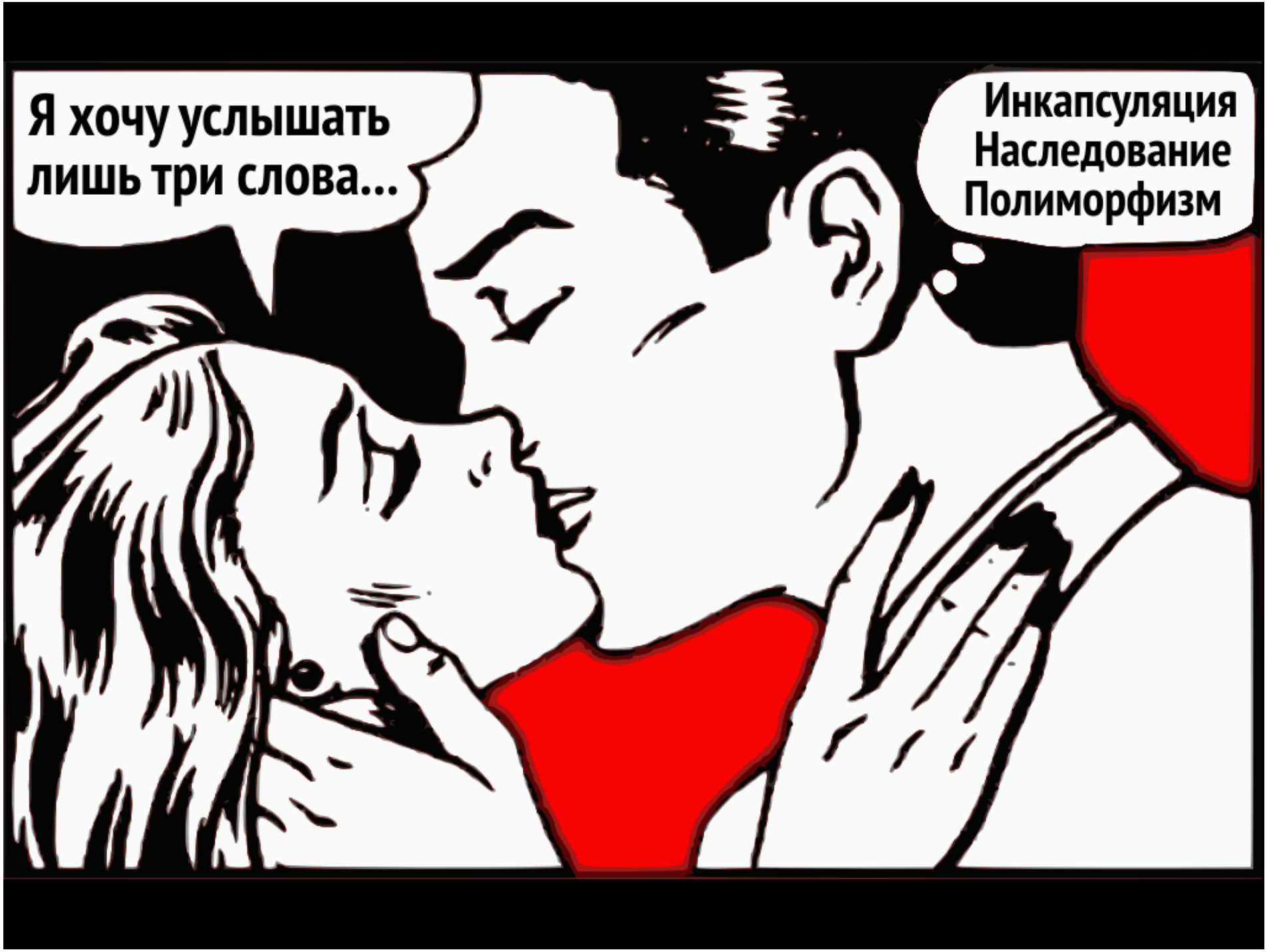
Sandwitch<Hamburger>

Sandwitch<Salmon>

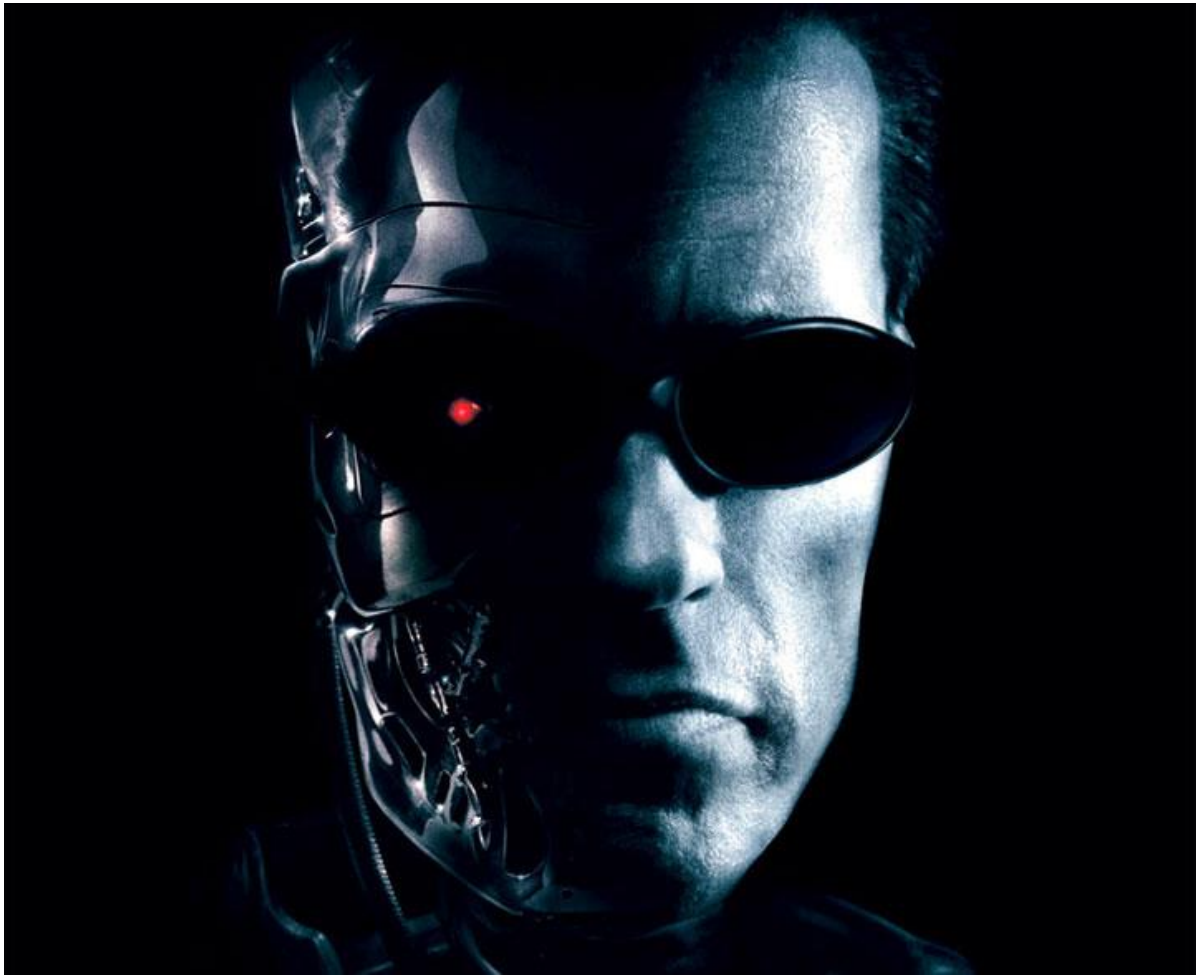
Meta-class



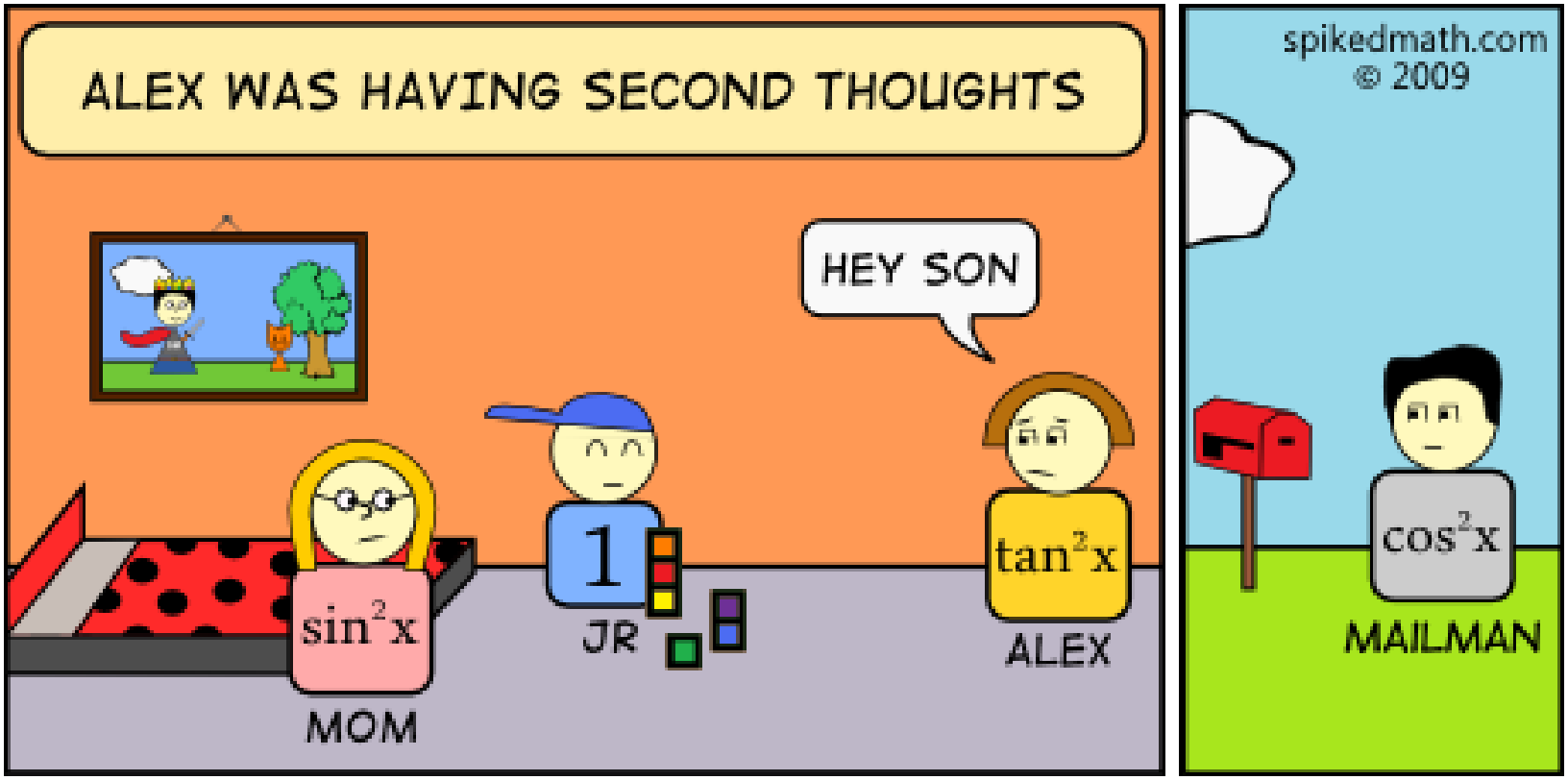
Basic OOP principles


Я хочу услышать лишь три слова...
Инкапсуляция
Наследование
Полиморфизм

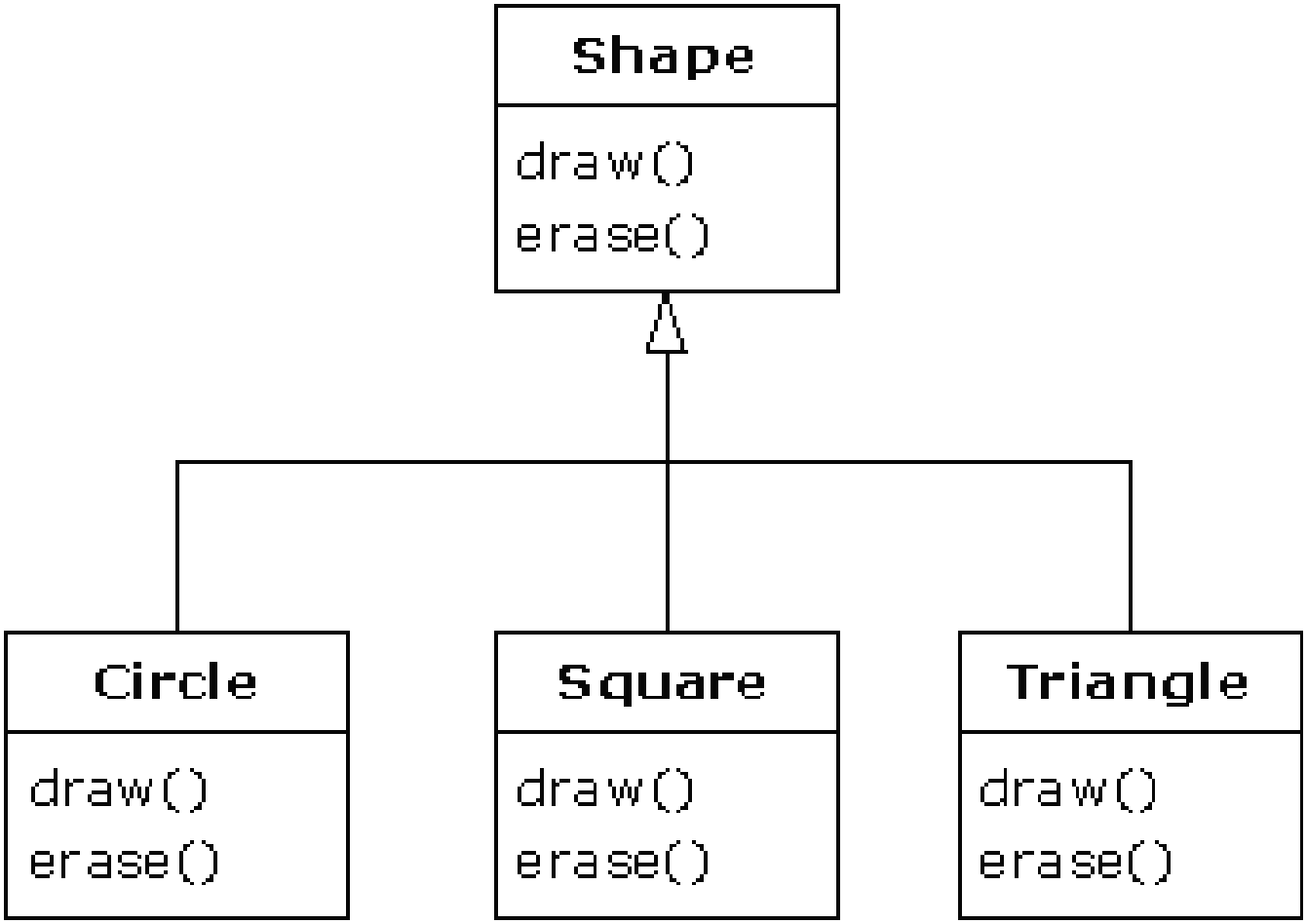
Encapsulation



Inheritance

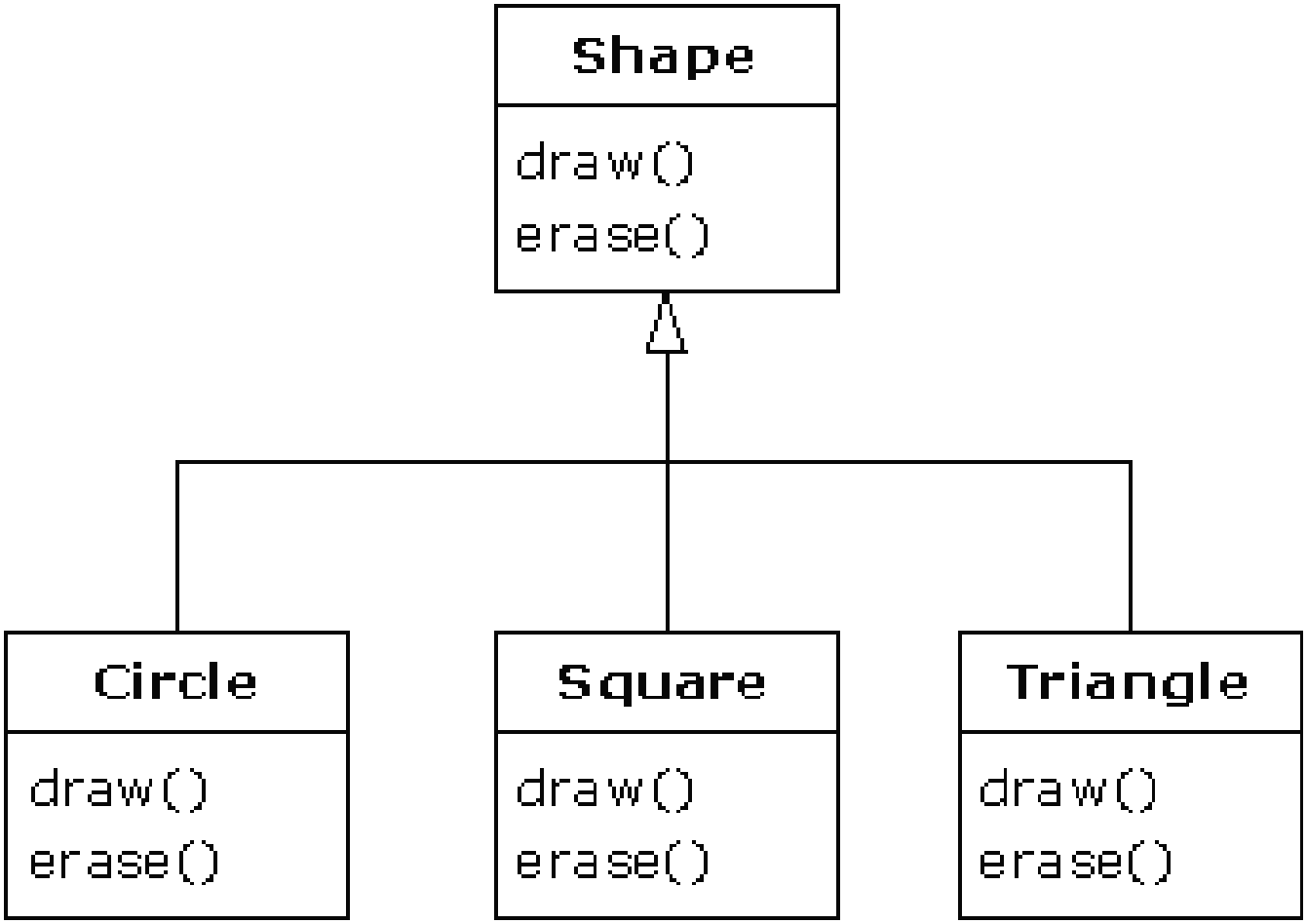


Inheritance



Polymorphism

Polymorphism



Decomposition

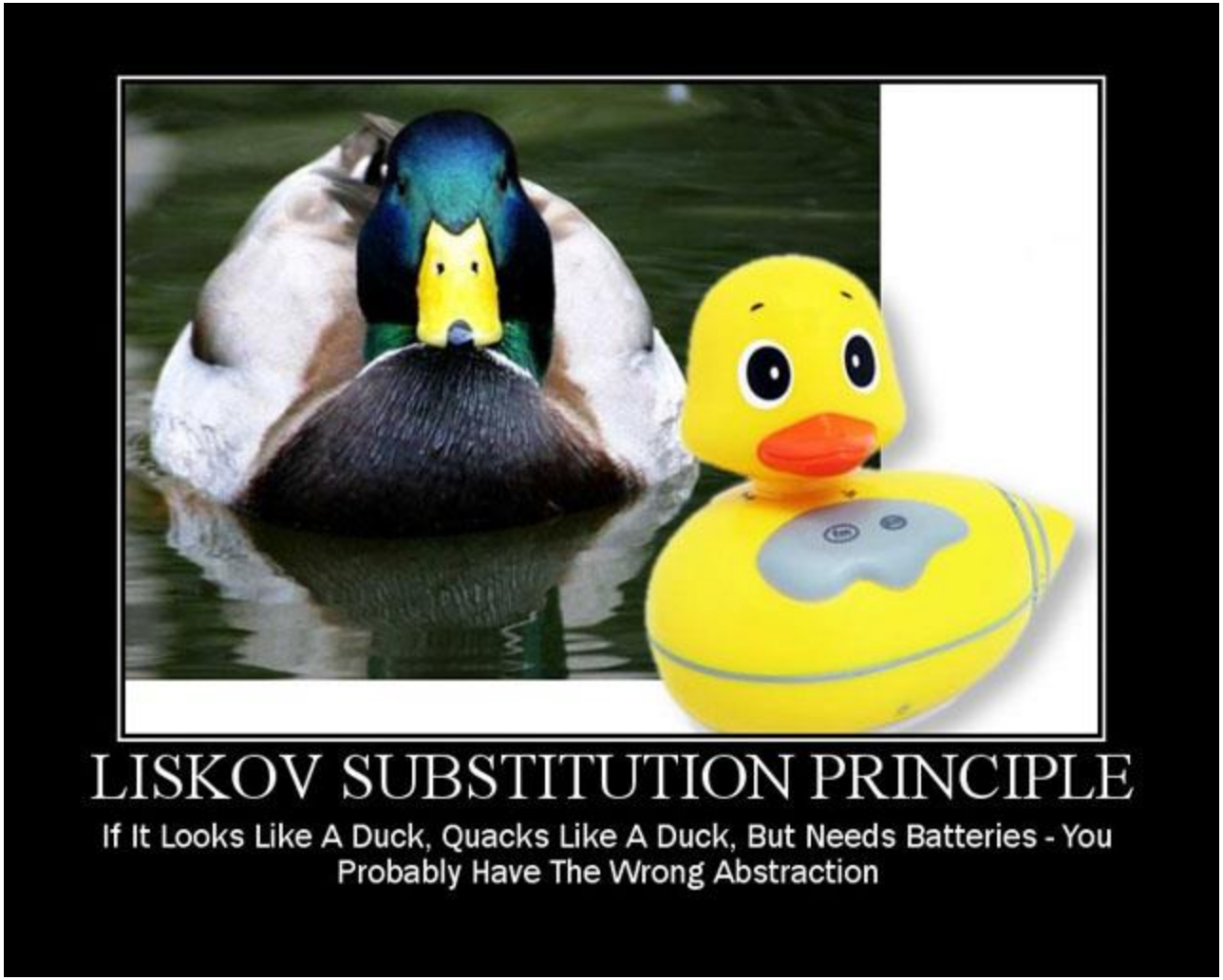
S.O.L.I.D.

SHUTTERSTOCK

Single responsibility

Open/Closed

Liskov Substitution



Interface Segregation

Dependency Inversion

Thanks for your attention!