LLD - SOLID principles

Agenda

- ✓ What is good software
- ✓ Design principles
- – SOLID
  - ✓ SRP
  - ✓ OCP

Good software

- Maintainable
  - Debug
  - Test
  - Understand

- Extensible
- Scalable

Design principles

- Set of rules
- Guidelines to create good software

$\boxed{\text{SOLID}}$

- CUPID

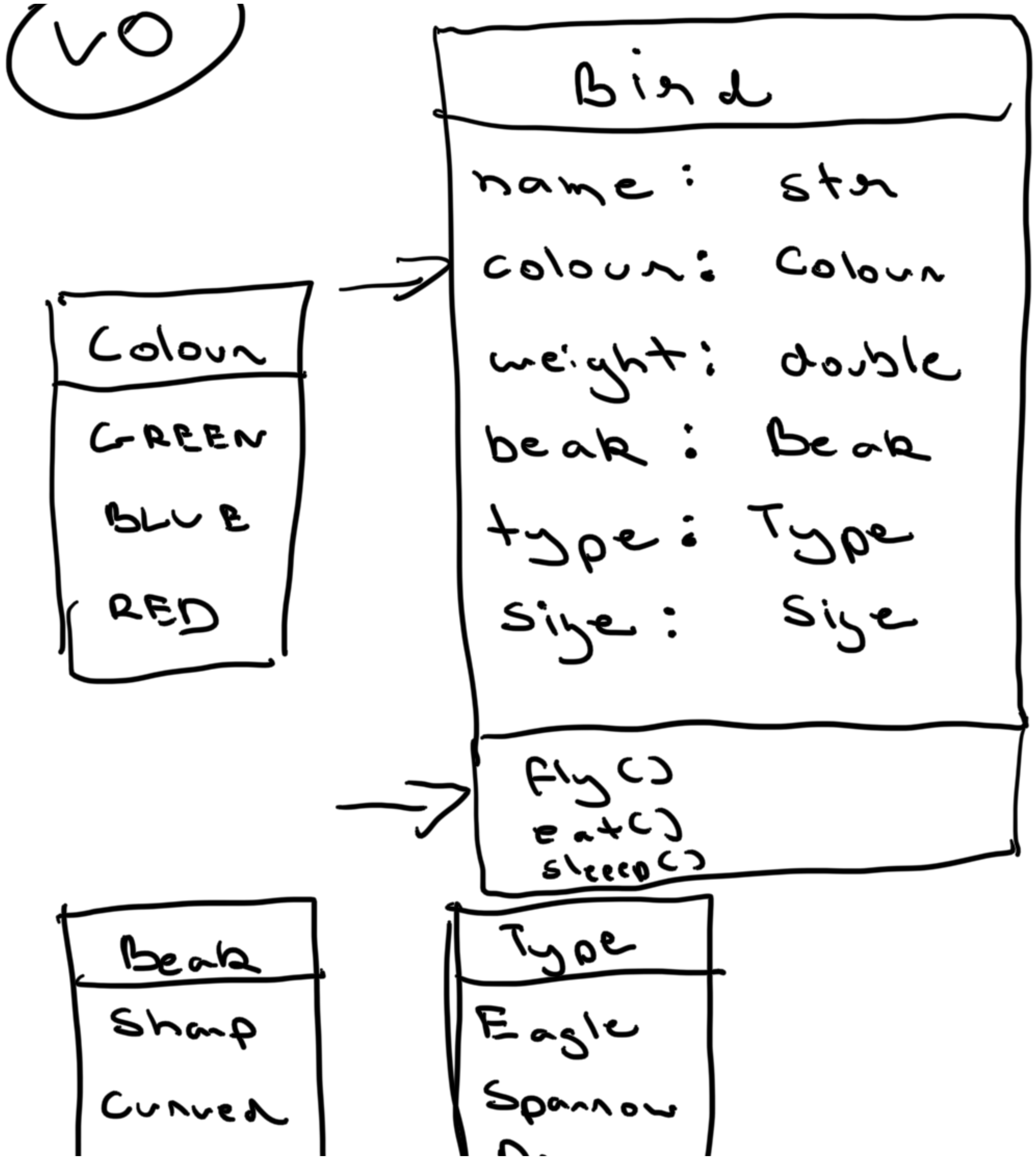
- GRASP

SOLID

- Single responsibility
- Open - closed
- Liskov subsitition
- Interface segregation
- Dependency inversion

Case study

Design a bird


VO
Bird
name : str
colour : Colour
weight : double
beak : Beak
type : Type
size : Size
fly()
eat()
sleep()
Colour
GREEN
BLUE
RED
Beak
Sharp
Curved
Type
Eagle
Sparrow

Problems

1. Not readable
2. Not easy to test
3. Merge conflicts
4. Not reusable

} Too many things in our method

Single responsibility

A single code unit

$\Rightarrow$ One responsibility

↓ ↓

method

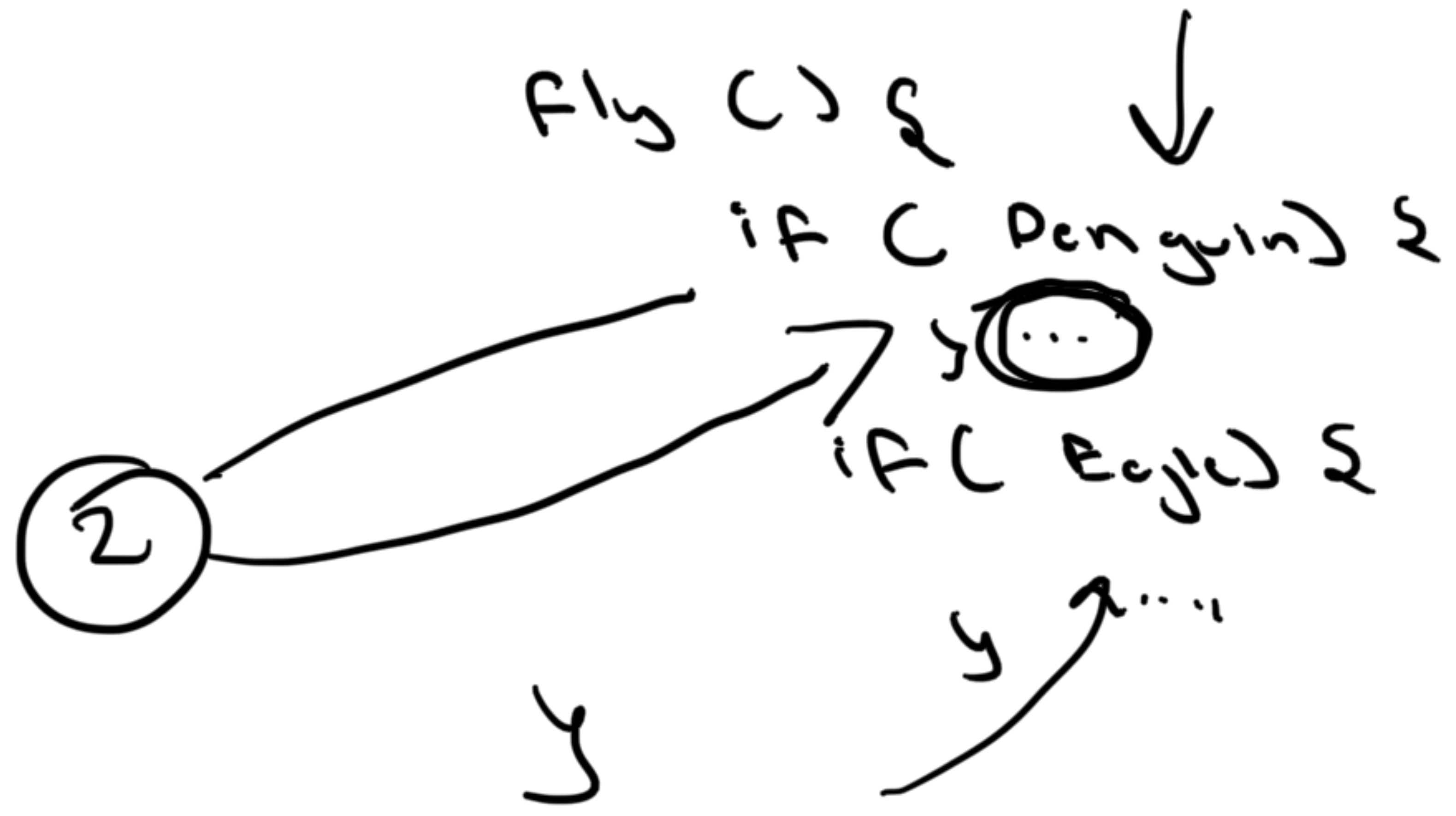
class → fig

Package →

Change → What are the diff. reasons to change a class

↓

①



```
fly () {
    if ( Penguin) {
    } (...)
    if( Eagle) {
    } ...
}
```

---

1 | if -else | switch |

2 Monster methods on God classes

Save a Bird to the DB (J 2

1. Create a bird
2. Connect to the DB
3. Query name, type
4. Execute
5. Create a new Bird
6. Close the connection

}

↓

monster methods

3. Utils

6:07 - 6:15)

- 10:45 }

$\boxed{\text{SRP}}$

$\boxed{\text{OCP}}$

$\boxed{\text{Cyclomatic complexity}}$

if - else

What?

→ Single code unit

⇒ Single responsibility

Why?

→ Maintainability

→ Extensibility

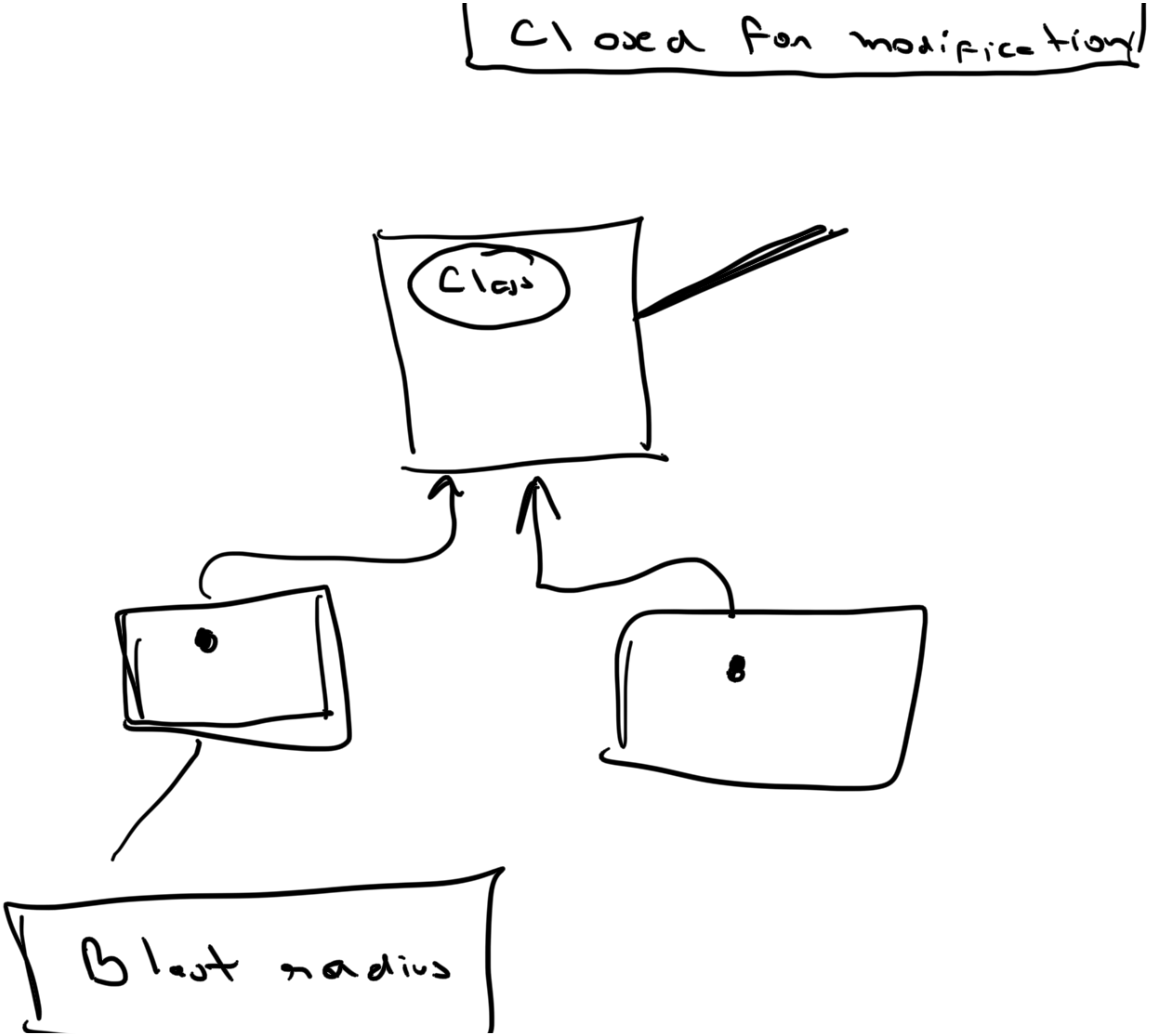
How?

→ Numbers of reasons to change

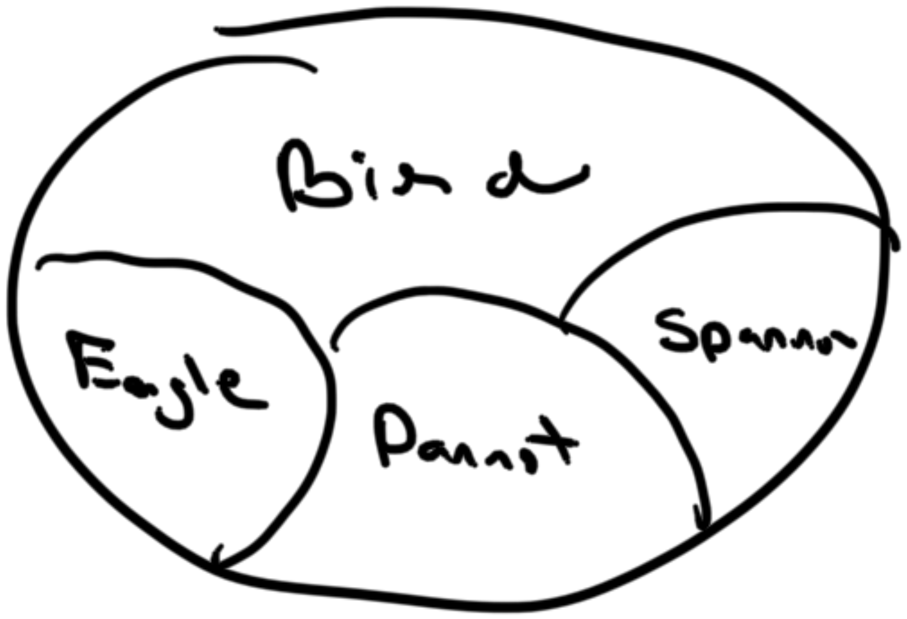
→ Subjective

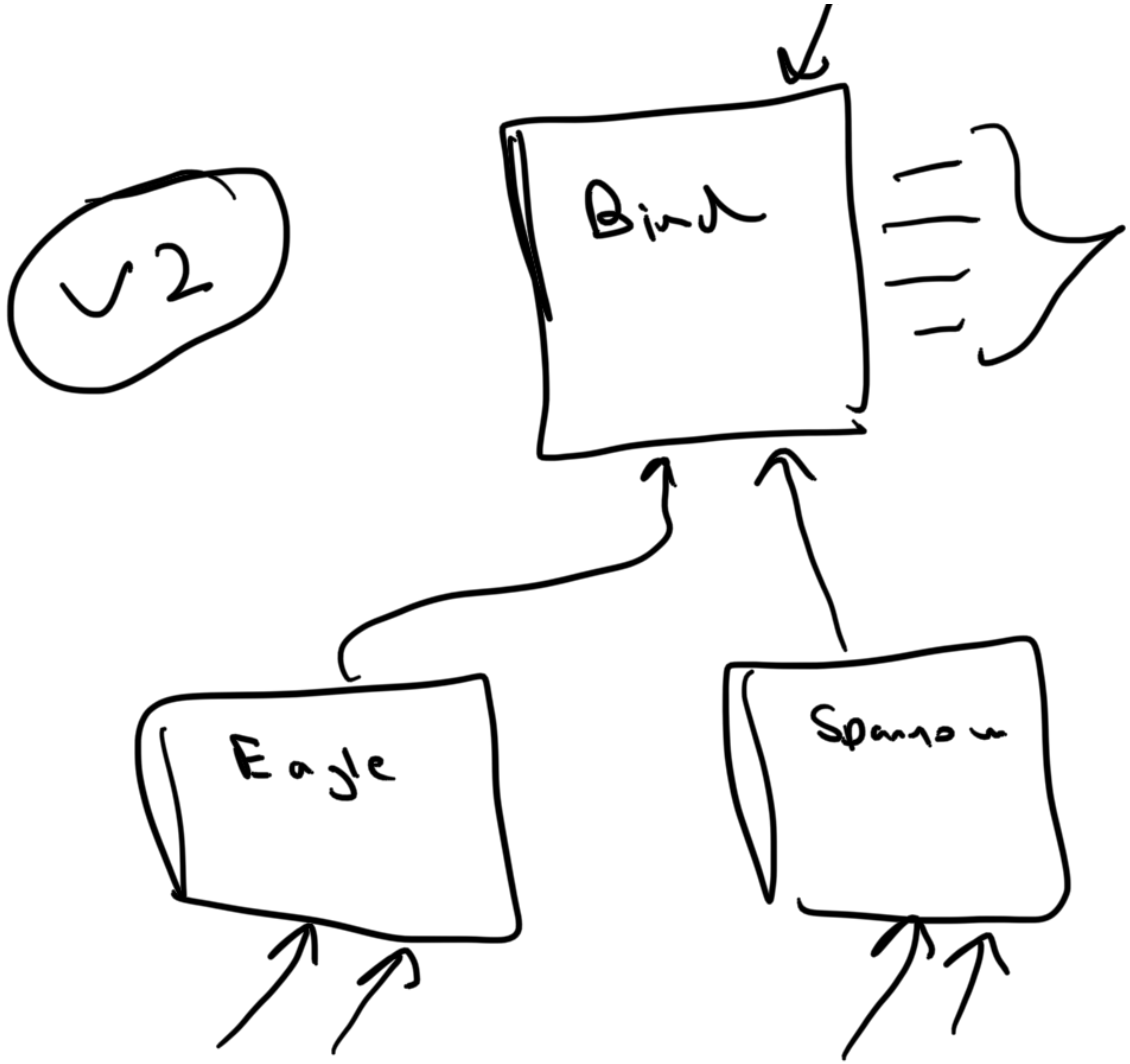
Open - closed

Open for extension


Closed for modification
Class
Blast radius

```
Bird
fly() {
    if(eagle)
    if(sparrow)
    if(peacock)
}
```





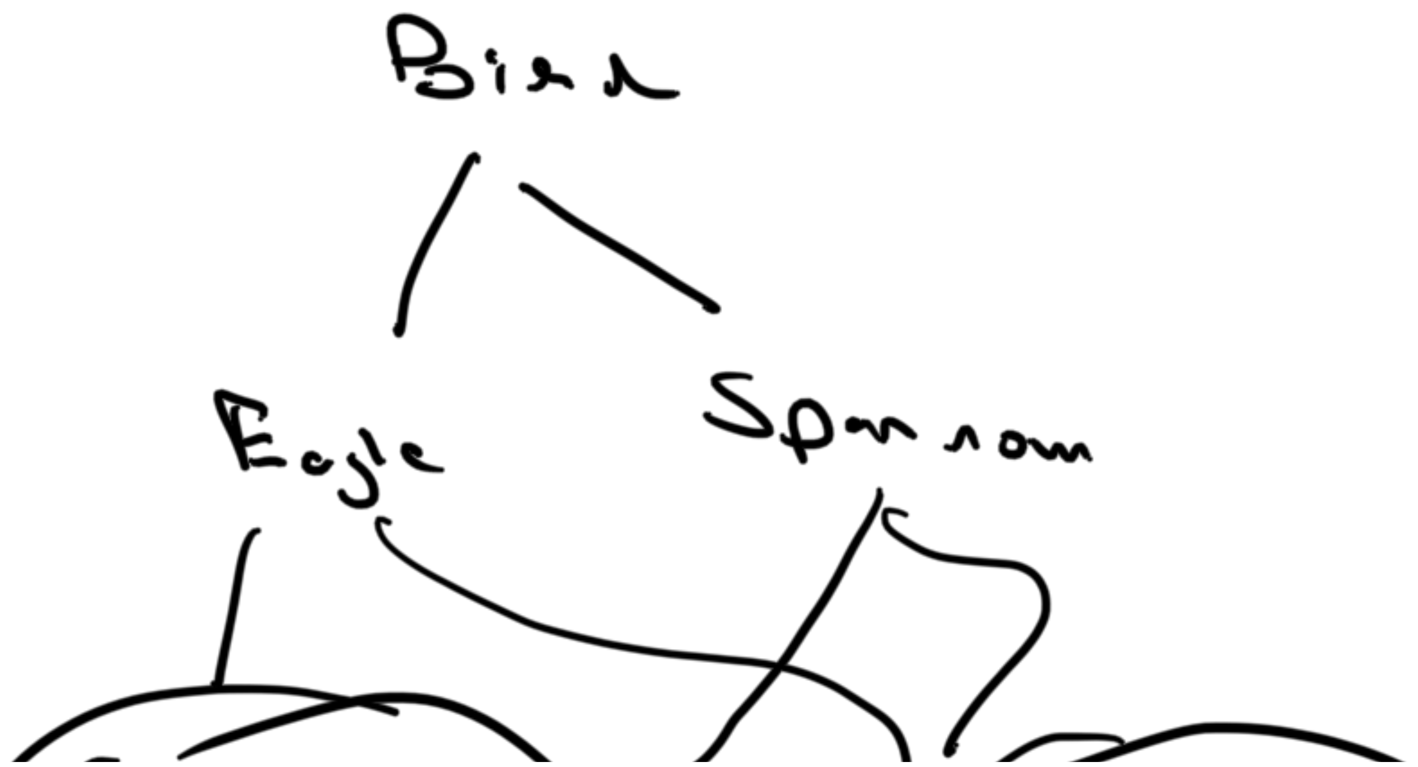
if 2 classes have common

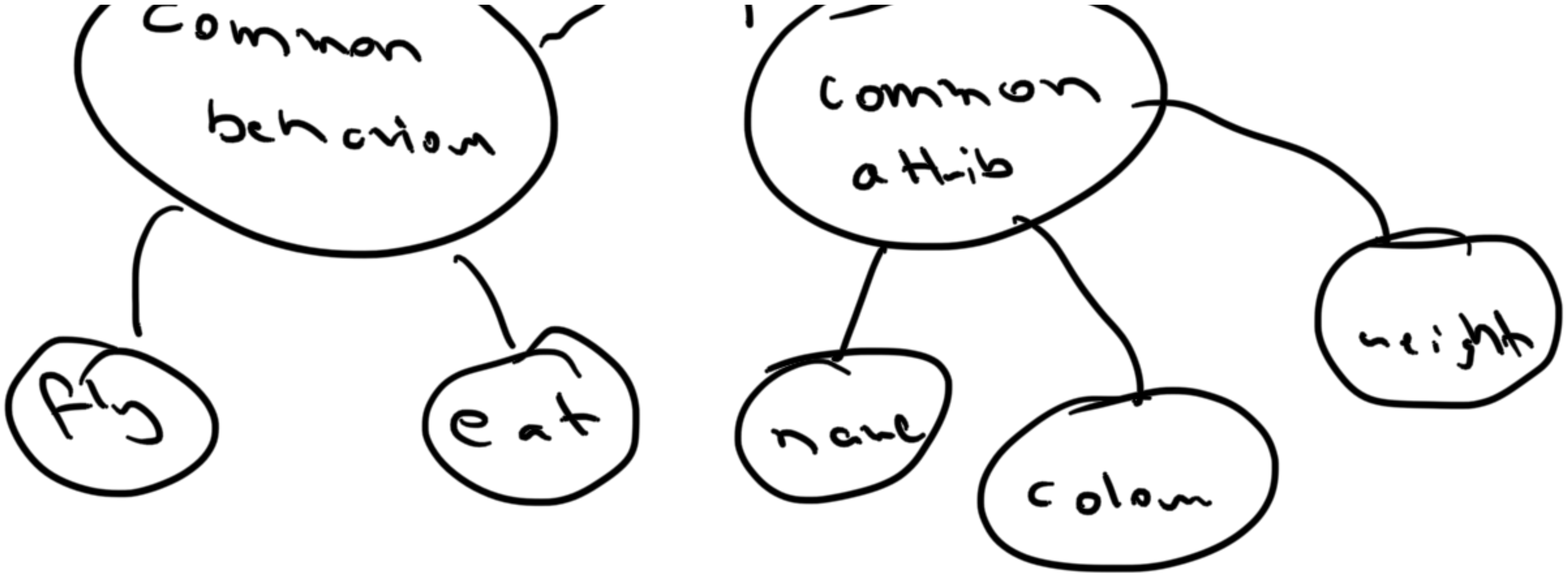
↳ common behaviour

interface

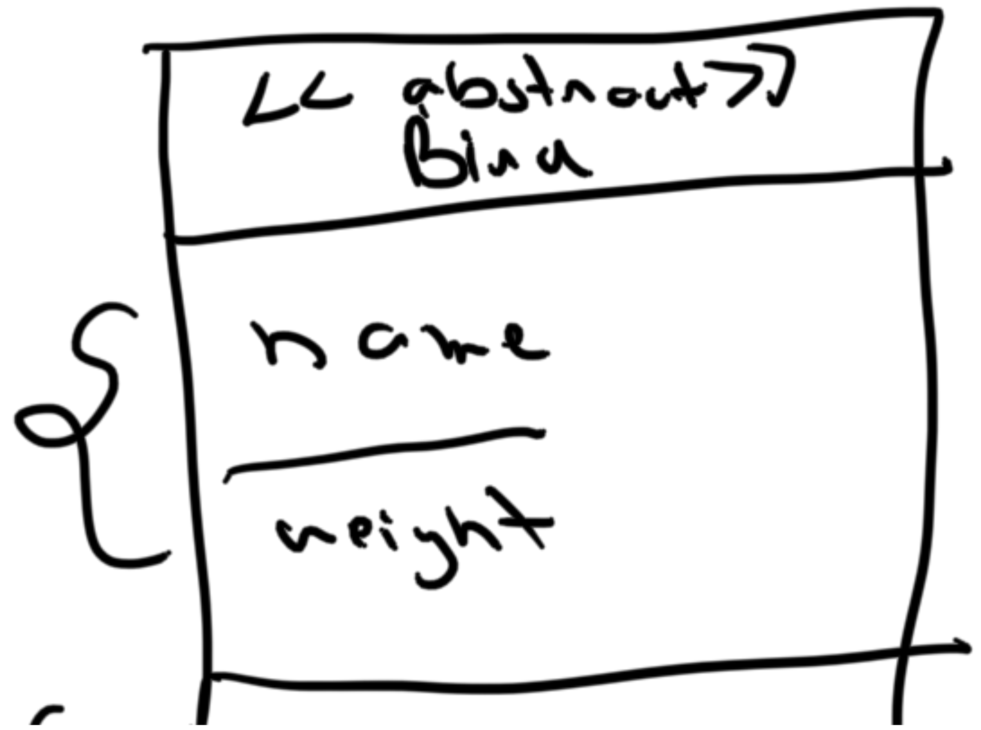
↳ common attrib + behav

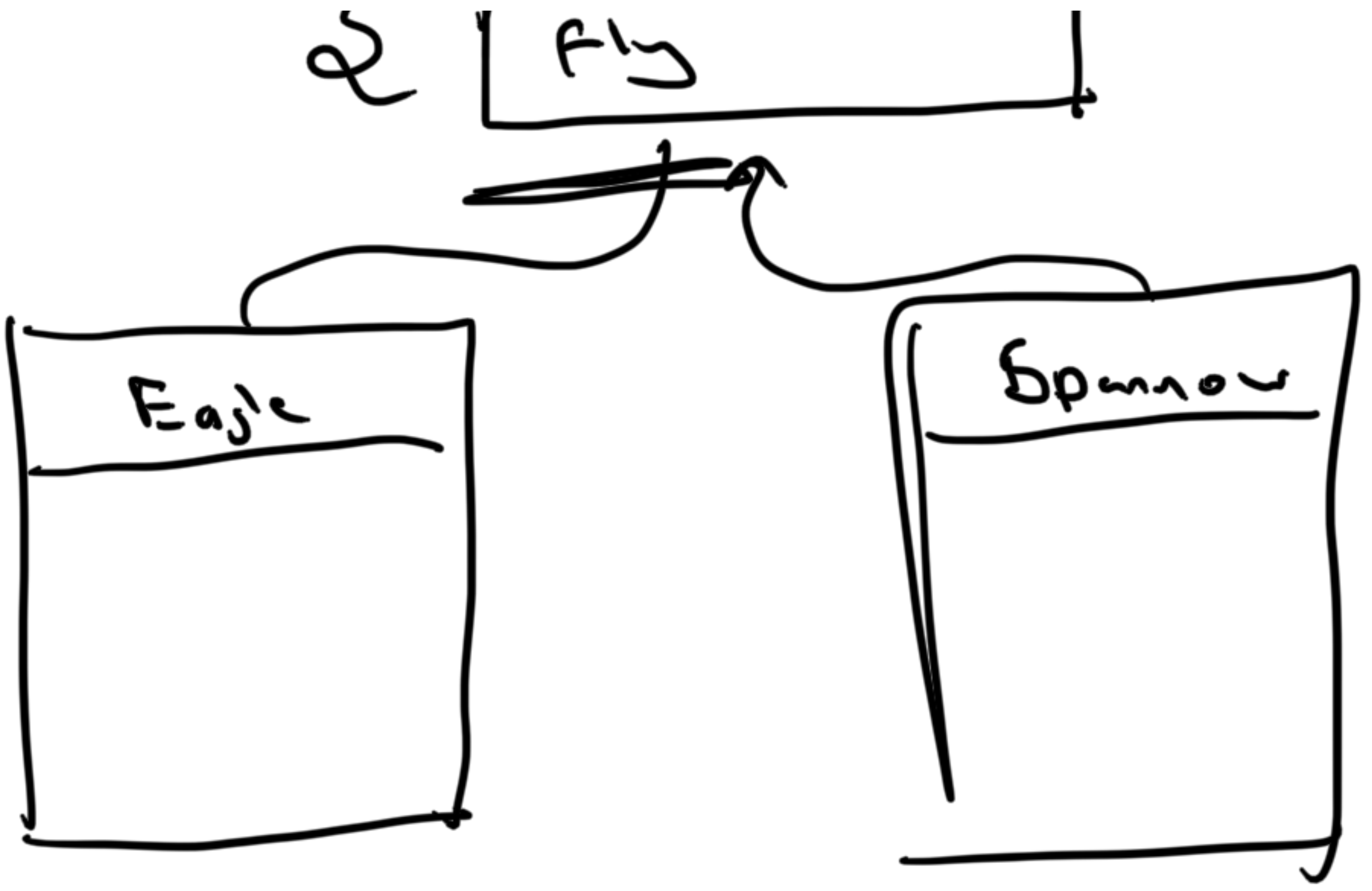
abstract




common behavior
common attrib
fly
eat
name
color
weight

abstract


<< abstract >>
Bird
name
weight



SRP — Single co → Sing responsibility

OCP — open for extension

closed for modification