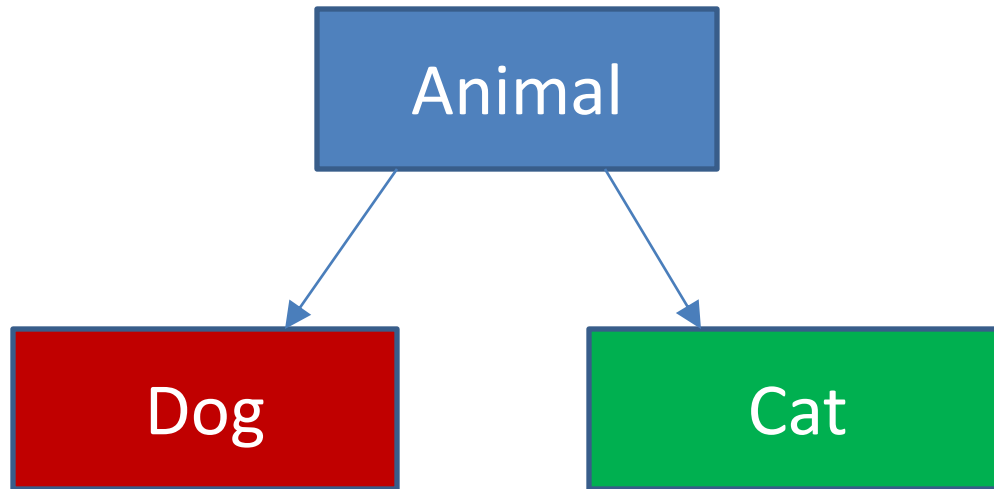


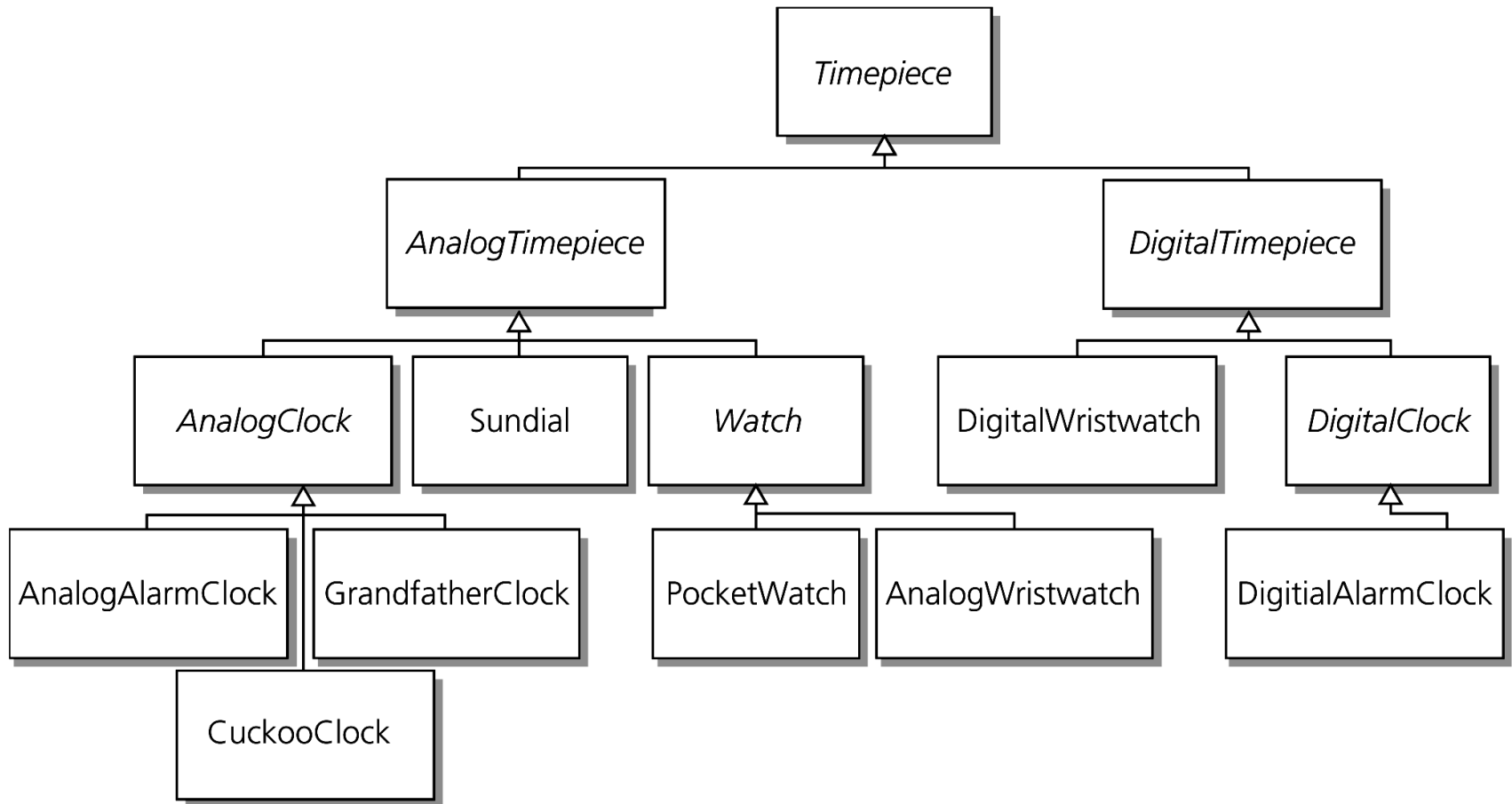
# Inheritance Examples

# Real-world Examples: Animals



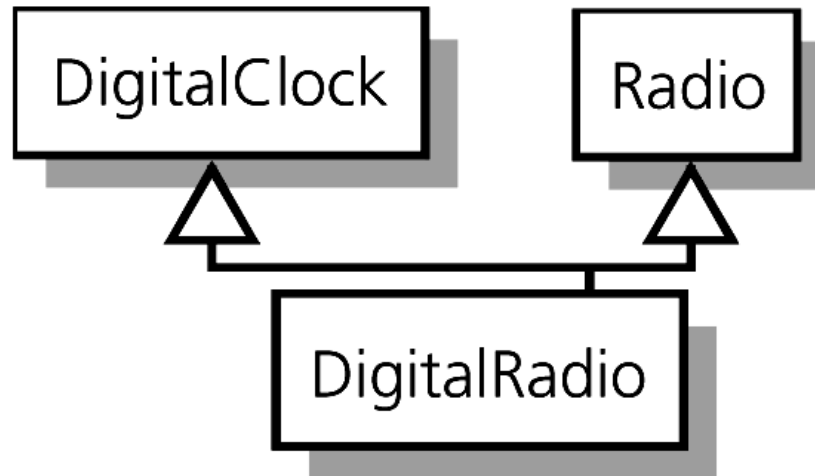
Source code: [http://en.wikipedia.org/wiki/Polymorphism\\_in\\_object-oriented\\_programming](http://en.wikipedia.org/wiki/Polymorphism_in_object-oriented_programming)

# Example #2: Timepieces

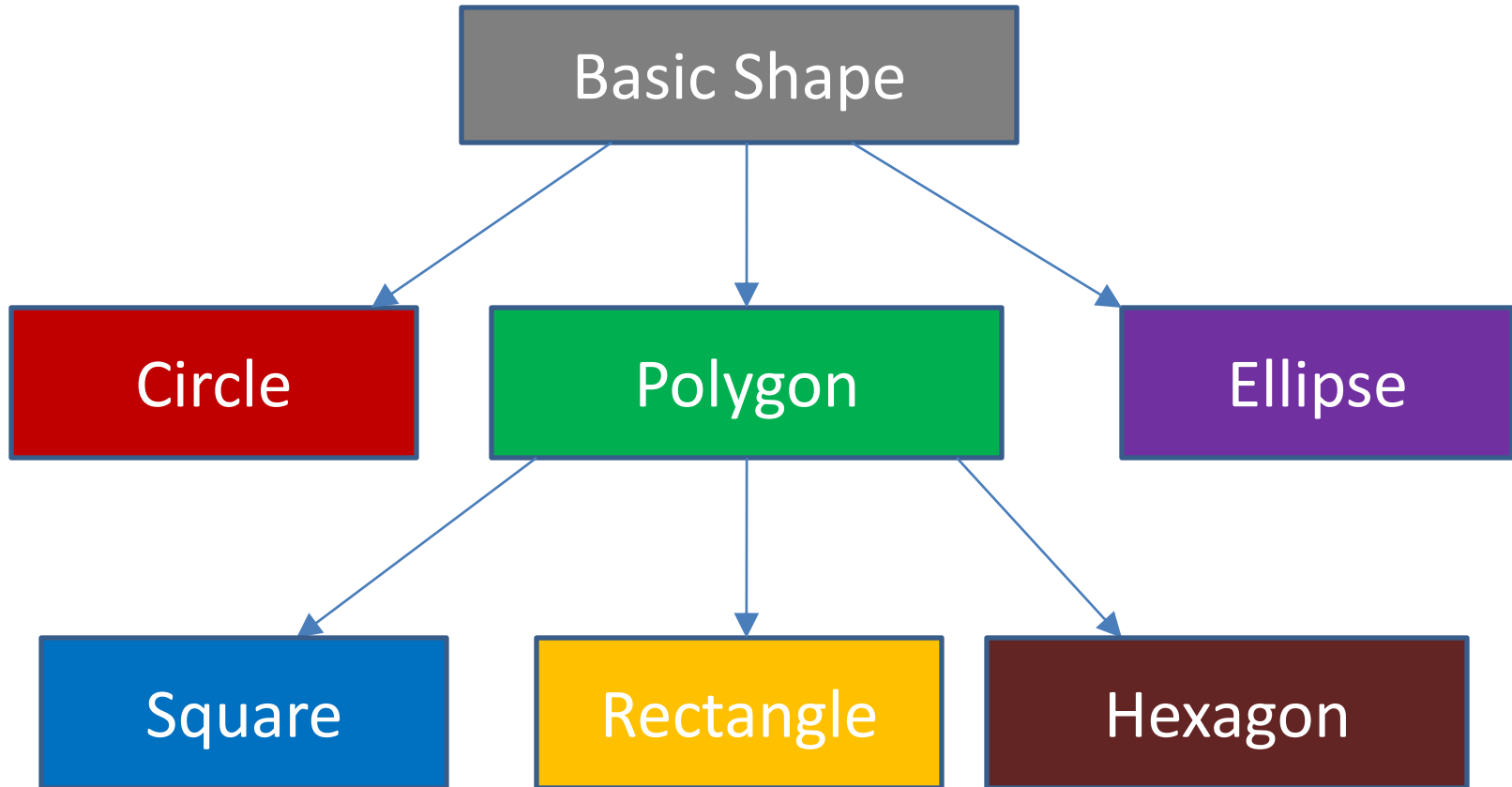


# Multiple inheritance

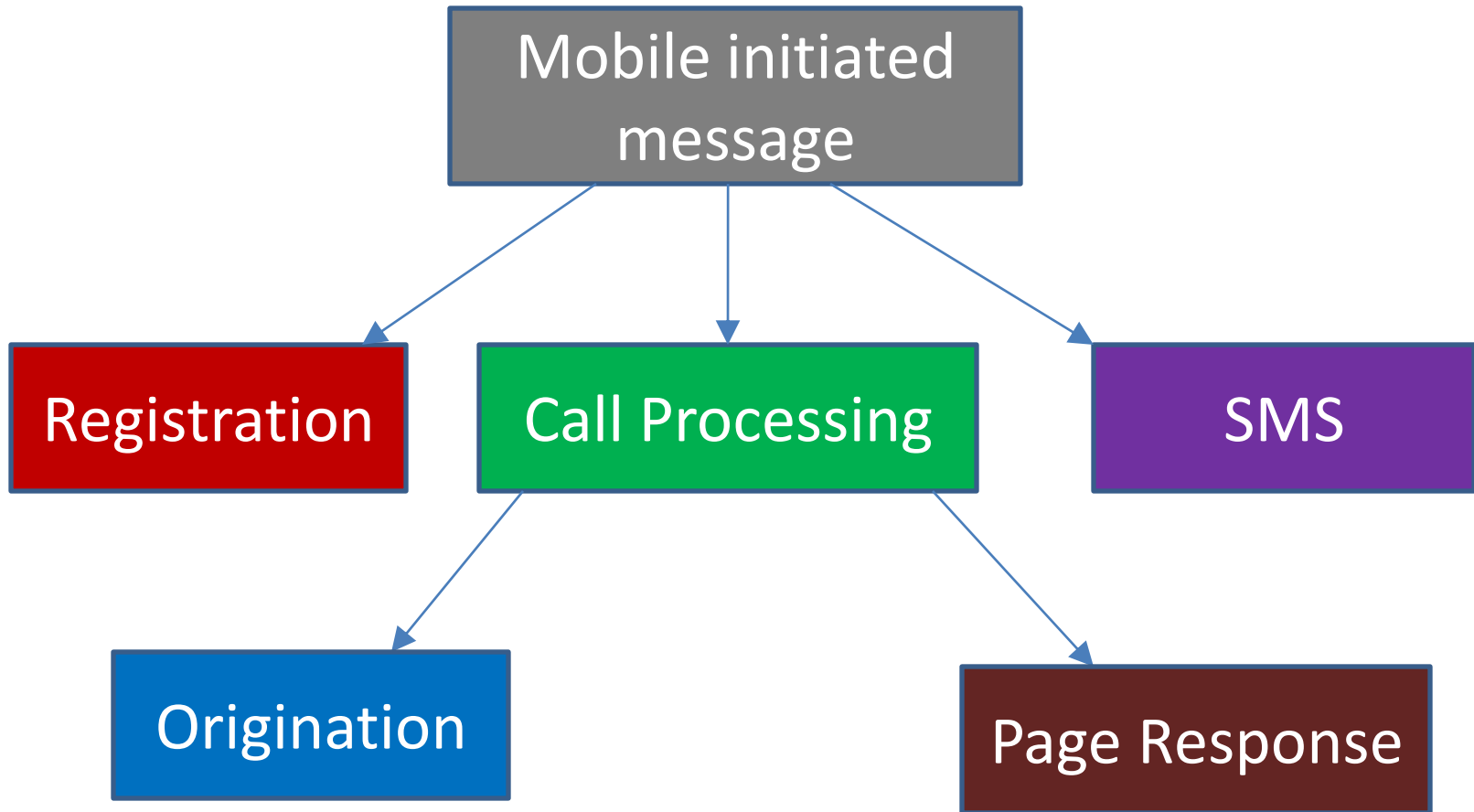
- A derived class can have more than one base class
- Java does not support it – uses “interface” instead.



# Example #3: Shapes



# Example #4: Wireless Telephony



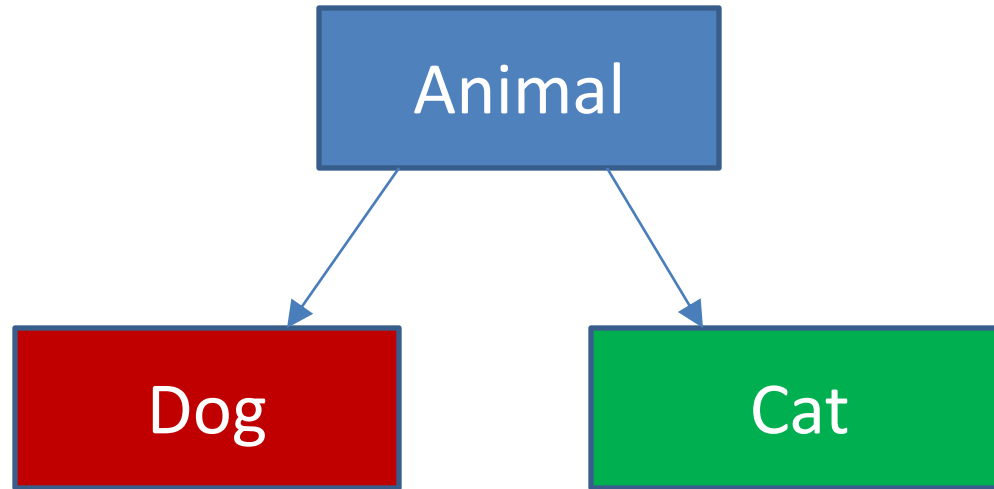
# Value of inheritance?

- Helps us to break software into manageable pieces
- Existing classes can be morphed to design new classes – code reuse
- Enables us to group different types of objects together and do some action on all of them.

# Inheritance Examples in Java and C++



# Back to Example #1: Animals

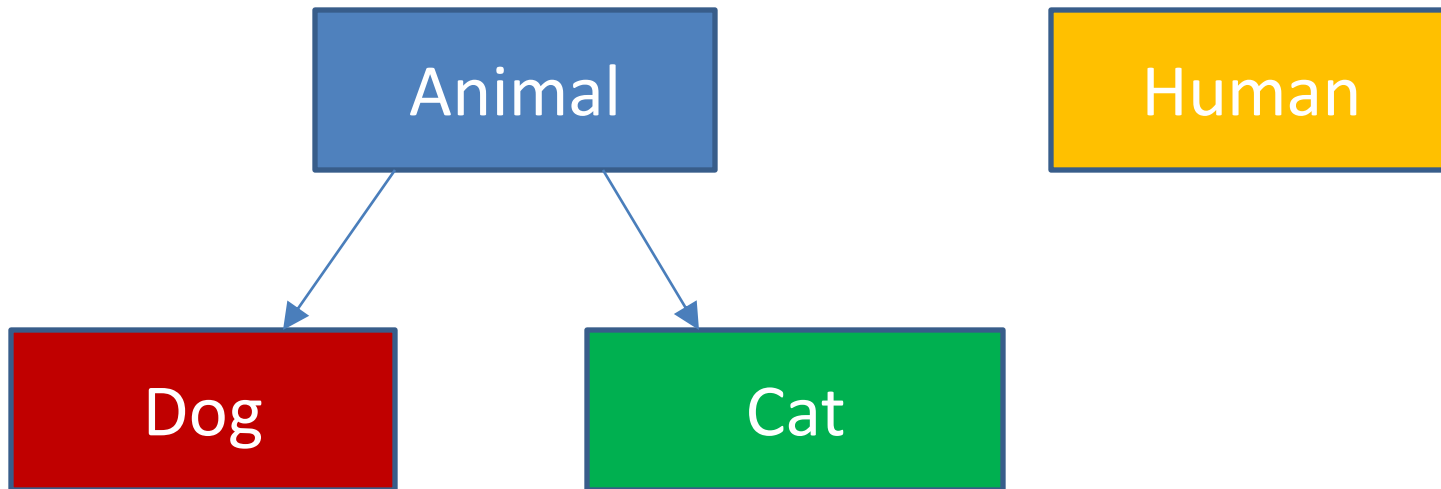


Want to group them together &  
make them talk?

# Concepts

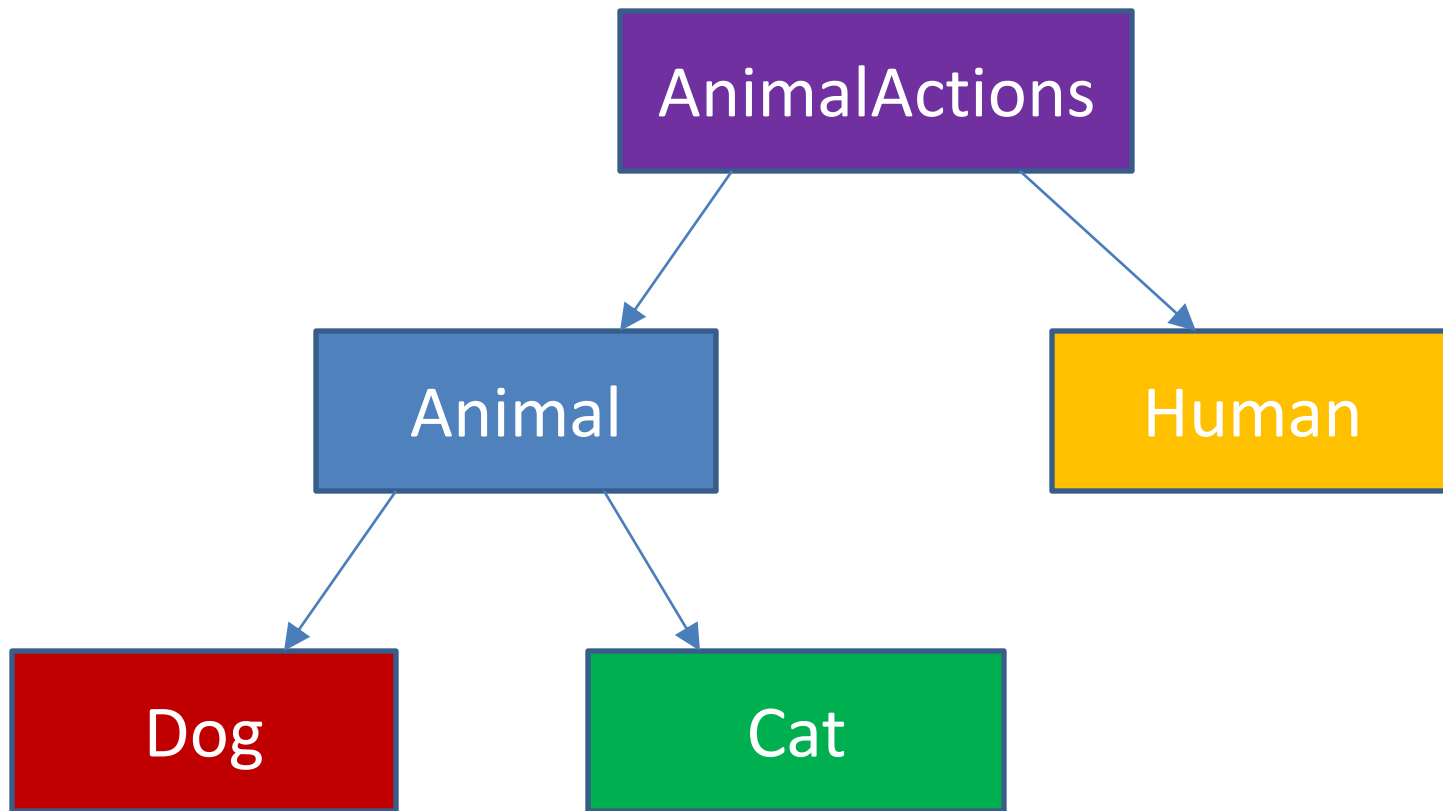
- Static binding vs. dynamic binding
- Polymorphism using virtual methods
- Abstract base class
- Ability of base class pointers to point to derived class objects

# Add Human?

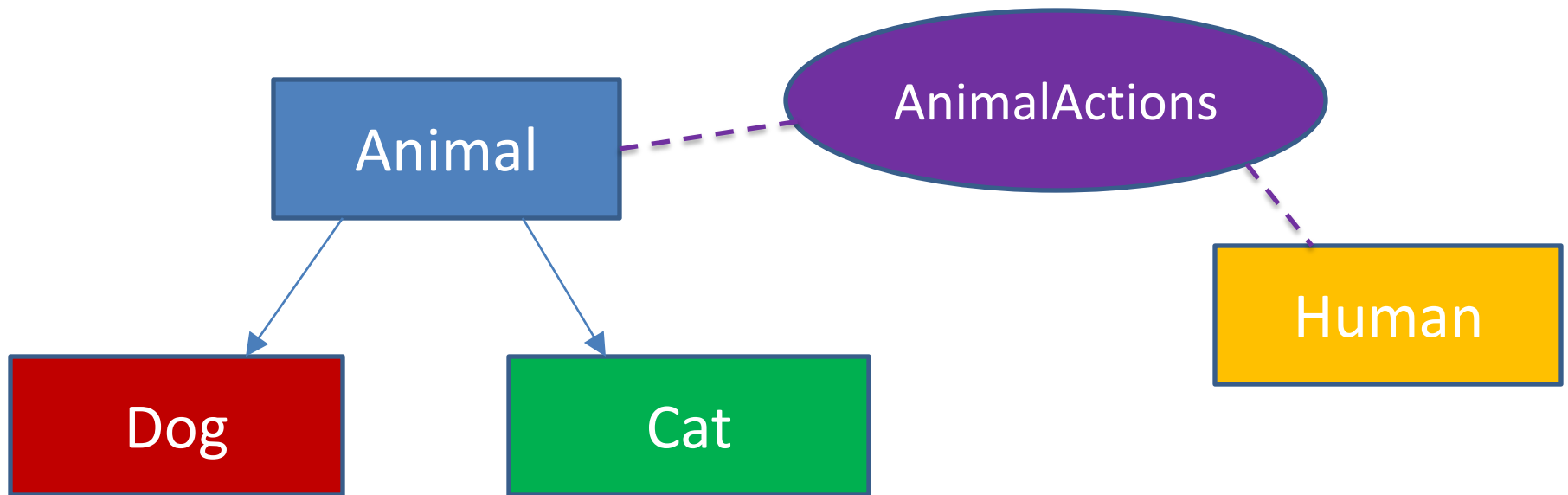


Want to group them together & make them talk?

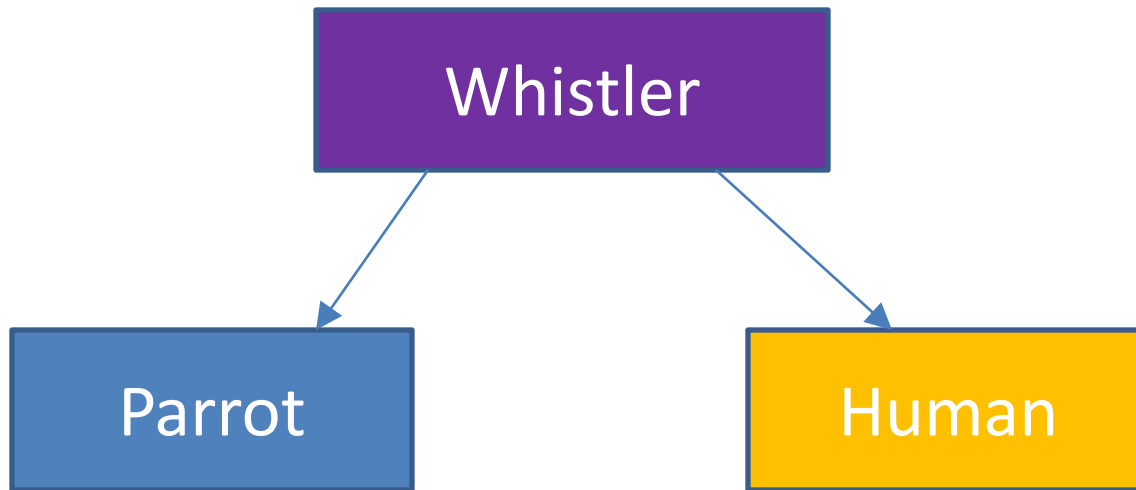
# C++



# Java: Interface



# Example from Wiki: Bad use of Inheritance



# Example from Wiki

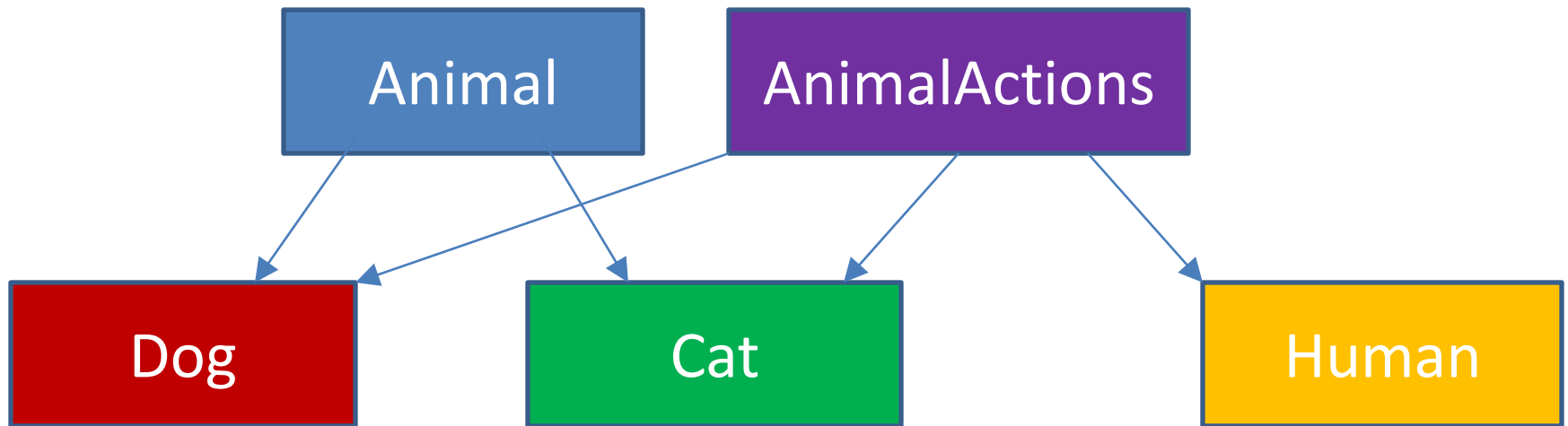


# Concepts

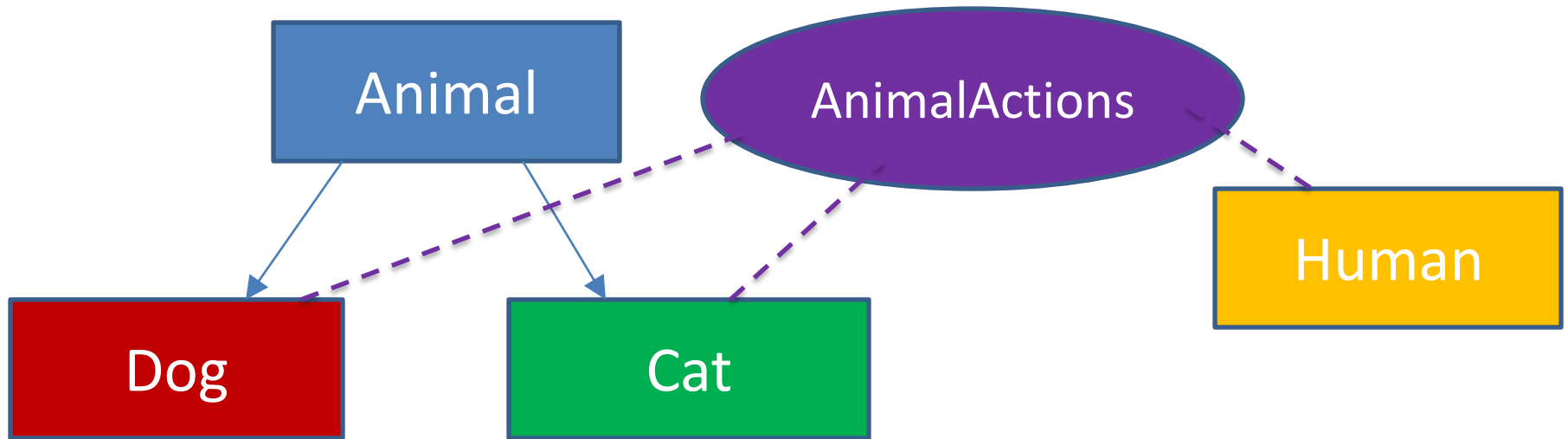
- Interface



# C++



# Java: Interface



# Inheritance Examples in Java and C++

# References

- [http://en.wikipedia.org/wiki/Polymorphism\\_in\\_object-oriented\\_programming](http://en.wikipedia.org/wiki/Polymorphism_in_object-oriented_programming) - Animals : Inheritance coding examples in Java/C++/...
- [http://en.wikipedia.org/wiki/Interface\\_%28Java%29](http://en.wikipedia.org/wiki/Interface_%28Java%29) – Java Interfaces