Useful programming patterns

1. Associations between data and control
2. Abstraction over hidden state ("encapsulation")
3. Associations between kinds of data
4. Reuse of code based on associations
5. Common underlying properties of data
Let’s build an object system!
Other systems focus on types and perf

• Java’s object system has a complex type system
  - Interfaces, private/protected members
  - Abstract classes
  - Subtyping and polymorphism

• C++’s object system has high-perf features
  - Distinguishing virtual methods from non-virtual
  - Optimizing runtime representation of objects
To be discussed: mixins/composition

• Raging debate: composition over inheritance?
  - Has-a vs. is-a relation

• Also called: mixins, traits, multiple inheritance
  - These are all slightly different, but approximately the same idea

• Good example of an up-and-coming idea!
Logistics

• Feedback form on the website

• Homework is due on Wednesday

• My office hours are tonight