Building Java Programs

Chapter 8
Lecture 18: Object Behavior (Methods) and Constructors, Encapsulation, this

reading: 8.2 - 8.3, 8.5 – 8.6
self-checks: #13-17
exercises: #5
Xerox

Alan Kay
Object-Oriented Programming

Alto (1973)

Star (1981)
Apple

Steve Jobs

Lisa (1983)

Macintosh (1984)
Why objects?

- Primitive types don't model complex concepts well
  - Cost is a double. What's a person?
  - Classes are a way to define new types
  - Many objects can be made from those types

- Values of the same type often are used in similar ways
  - Promote code reuse through instance methods
Kinds of methods

• **accessor**: A method that lets clients examine object state.
  • Examples: `distance`, `distanceFromOrigin`
  • often has a non-void return type

• **mutator**: A method that modifies an object's state.
  • Examples: `setLocation`, `translate`
Constructors

- **constructor**: Initializes the state of new objects.

  ```java
  public type (parameters) {
    statements;
  }
  ```

  - runs when the client uses the `new` keyword
  - no return type is specified; it implicitly "returns" the new object being created

- If a class has no constructor, Java gives it a *default constructor* with no parameters that sets all fields to 0.