What We Have Covered So Far

- Introduction to Java
  - Basic Data Type
  - Basic Control Structure
  - OOP Concept
  - GUI
- GUI Design
  - Principles
  - Models
Java Basics

- Data type
  - Primitive data types (what are they??)
- Operators
  - Similar to C/C++
- Variables
  - automatic vs. static
- Scoping
  - Block vs. Class
Data encapsulation in objects:
- data (attributes)
- methods (behaviors)

Objects hide information:
- private data/methods
- public interfaces

Member methods
- Constructor
- Accessor
- Mutator
- Finalizer
Notes on Object-Oriented Design

- Design code around class/object/method construct
- Plan for re-use of key data objects via “packages”
- Restrict object access via public/private
- Design a good interface with accessors, mutators, and hidden methods/data
- Separate internal implementation of object from its interface
Java: Object-Oriented Programming

- Inheritance:
  - Advantage
  - superclasses and subclasses
  - Is-A, Has-A??

- Polymorphism:
  - abstract and concrete classes

- Dynamic binding
  - The exact type of an object is determined at run time.
Multiple “Inheritance”

Abstract Class

Thread Object

Event Object

My new Object

Is-A
Inheritance
Polymorphism

Difference??

Interfaces

extends

implements
Java: Basic GUI Components

- Swing
  - What is it?
  - Advantages
- Event handling
- Inner classes and anonymous inner classes
  - Know the names
A Java Screen Layout

- Frame → JFrame
- Menu Bar (optional)
- Content Pane

- Layout Managers
- Panels
- GUI Components
GUI Design

- Design Principles
  - Three pillars, six stages, etc
- Participatory Design (pros and cons)
- How to make UI friendly
  - Distinguish between good and bad designs
- Theories
  - Folly and van Dam four-level approach
  - GOMS