Lecture 2

• Topics Covered
  – Introduction to Java
Object-Oriented Programming Review

- Class
- Object
- Instance
- Methods
  - Class methods
  - Instance methods
- Data Members
  - Class data members
  - Instance data members
- Inheritance
  - Superclass (base class)
  - Subclass (derived class)
Java Background

- **Creator**
  - James Gosling of Sun

- **Purpose**
  - Need to have a language that worked on a variety of systems
  - Sun thought it might be of great use in the future (home appliances, hand helds, etc.)

- **Original Names:** Project Green, Oak

- **Goal:** Greater simplicity and reliability than believed in C++
Java vs. C++

- Can you take an executable built for these machines and run it on a MAC or other type of system?
- Portable
  - Java creates byte code that can be interpreted into the appropriate binary code at run-time
    - Source Code goes to a compiler → Byte Code
    - Byte Code goes to an interpreter (Java Virtual Machine) → Executable Code
    - “Just in Time” compilers have been written to make this process more efficient
- Handles garbage collection implicitly
- No pointers, although references are used “underneath”
Java vs. C++ cont’d

• Implicit type casting goes only from smaller to larger
• No structs or unions
• Only allows single inheritance
  – Interfaces allow some benefits of multiple inheritance
• Automatic index range checking
• Concurrency/threading is not terribly complicated
• Has nice set of class libraries
Java vs. C++ cont’d

• Can have applications or applets
• Everything is in a class
• Although closer to pure OOP, primitive data types are not objects.