

CS 91.204 Computing IV:
Advanced OO Programming and
Software Tools
Java Basics

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Java Overview

- OO language from Sun
 - syntax similar to C/C++
 - simplified object model
 - type-safe
 - compile type info into class file, preserve type info
 - JVM check type safety at run-time
 - automatic memory management
 - garbage collection
 - no pointers!
 - restricted “pointer” -- reference

Java Data Types

- Primitive types
 - boolean (true, false)
 - char (16-bit unicode)
 - byte, short, int, long, float, double

Java Data Types

- Reference types
 - Class
 - Prototype for objects
 - Example: String
 - Interface
 - Constants and method prototypes

Java Syntax

- Based on C/C++
 - Expressions
 - Statements

Expressions

- Arithmetic, boolean, and string expressions
 - $(x*x + y*y > 25) \ \&\& \ (x > 0)$
- Operators
 - + addition and String concatenation
 - - subtraction
 - * multiplication
 - / division
 - % mod (remainder from integer division)

Expressions

- Operators
 - < less than
 - <= less than or equal
 - > greater than
 - >= greater than or equal
 - == equal
 - != not equal
 - && and
 - || or

Statements

- Assignment
 - primitive type
 - reference type

Statements

- if-else
- while, do-while loop
- for loop
- switch
- break, continue, return

Classes

- Basic unit to express computation in Java
 - Everything has to be in a class
- Define a class Hello
 - Print “Hello, world” message

“Hello, world”

```
public class Hello {  
  
    public static void main(String[] args) {  
        System.out.println("hello, world");  
    }  
}
```

DrJava

- An interpretive environment for Java
- Great tool for learning Java
 - Type and execute Java statements
- Turtle graphics in MediaBook Ch3