CSCI 136: Data Structures and Advanced Programming

Lecture 2
Java Basics

Instructor: Dan Barowy Williams

Your to-dos

1. Lab 0, due Tuesday 9/13.
2. Read before Wed: Bailey, Ch 1-1.4 (inclusive).

Topics

Java basics
Static data types
Object orientation

Announcements

• Anonymous feedback form on website
• CS Colloquium this Friday, Sept 16 @ 2:35pm in Wege Auditorium (TCL 123)

Ina Fiterau Brostean (UMass Amherst)
Machine Learning for Healthcare

Fiterau’s research lies at the intersection of machine learning and healthcare. Her Information Fusion Lab is currently working on a project combining features extracted from brain MRIs with patient demographics, test results, and contextual information, to detect Alzheimer’s disease earlier than traditional diagnostics can.
Java types
byte
short
int
long
float
double
boolean
char
and user-defined classes
(you should memorize this list)

The life of a program
development time
compile time
run time
Writing code
Running javac
Running java
Definition slide

A definition slide defines an important term that you should remember. You are strongly advised to write down and study these key terms.

(definition slides look the same to make them easy to spot!)

Static data types

A data type is a label, assigned to a variable, that ensures only valid operations are allowed using that data.

A static data type is a type that is checked before a program runs. Static data types are usually checked at compile time. A program that fails a static type checks is not compiled.

(always be sure to submit lab code that compiles!)

Using data incorrectly yields a type error.

Let’s grow a few programs…
Java is Object-Oriented

- OO is a **system** for writing code that has properties **highly valued** by software engineers.
- Those properties are:
  - **Code reuse**
  - **Modularity**
  - **Data abstraction**
- It is sometimes said (**incorrectly**) that OO is about "modeling the real world."
- OO is a very big topic, and it takes awhile to master all the pieces.
- For now, we are going to focus on **data abstraction**.

If you don’t understand all these words just yet, **don’t worry**.

Recap & Next Class

**Today:**
- Java basics
- Static data types
- Object orientation

**Next class:**
- Classes and objects
- Designing programs with classes
- Fancy input using **Scanner**