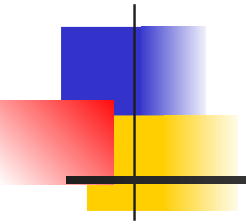

Introduction to Programming 2

Object-Oriented Programming & Modeling

by

James Brucker

Why study object-oriented programming?

- O-O is the dominant programming paradigm
- You will need it in your internship.
  Many interns say they used OOP knowledge *a lot*.
- Employers require good O-O background.
- Many other courses build on what you learn in OOP.
  - *Without Java, O-O, and modeling skills, you will struggle for the next 3 years*.

3 Courses in 1!

Java

Object Design

Modeling with UML

3 Areas We Will Study

Java	Object Orientation	Modeling
How to program in Java Collections Graphical UI Generics Interfaces & Lambdas Java 8 Features Packaging (JAR files)	Encapsulation Polymorphism Inheritance OO Approach to design Design Patterns	Modeling with UML Abstraction Design Principles Modularity

BONUS topics

- O-O Programming in **Python** (occasionally)
- How to test programs using **JUnit**
- Some real **frameworks** for creating apps

General Goals

Gain understanding and practical skill in...

- O-O paradigm
- Java programming skill
- good software design and coding skills
- common Design Patterns (a few)
- Unified Modeling Language (UML) to express design
- how to use frameworks

Approach

Labs to learn and practice concepts.

Programming assignments for deeper learning

Homework to learn things on your own

Quiz to measure your understanding

Evaluation

One grade for both lecture and lab sections.

Your grade is based on:

- Midterm and Final written exams
- Programming exams
- Programming assignments
- Class participation
- Quiz scores
- Laboratory work and participation

At least 50% on both written exam and lab exams to pass.

Approximate Grading Scale

A	85% and above
B	75% - 85%
C	65% - 75%
D	55% - 65%
F	less than 55% overall
	or written exam average < 50%
	or lab exam average < 50%

To pass you must average >= 50% on written exams and lab exams.

Why? You must know concepts and how to use them.

Real Meaning of Grade

A demonstrates mastery of the material and excellent ability to apply it to new problems

B very good understanding and ability to apply

C satisfactory

D incomplete understanding and/or unsatisfactory ability to apply course material

F poor understanding or inability to apply material

OOP is NOT a Democracy (sorry)

1. No copying
2. Do assigned reading & work
3. Write good quality code
4. Use the coding standard
5. Install required software on your machine
6. No food in lab (drinks OK)
7. Participate in class

Copying

Copy anything => Fail (F). Including Homework.

No second chance.

Required Software (on your machine)

- Java SDK version 8 or 11.
- Java API docs: install locally and *bookmark* in your browser. Don't rely on Internet!
- IDE your choice: Eclipse, Netbeans, IntelliJ, BlueJ
- Git client
  - command line "git" is required
  - you can also use git client in your IDE

Recommended:

- Java tutorial from Oracle.

Do Assigned Work

1. Some reading every week. Approx. 30-60 pages.

2. Programming assignment every 2 weeks.

   Longer than lab exercises.

   Learn a lot from PA, and big impact on your grade.

3. Homework, sometime submitted sometimes not.

Write Good Quality Code

1. Write meaningful Javadoc comments.
2. Code should be easy to read.
3. Use the class coding standard.
   It is based on industry standards for Java, derived from Oracle's Java standard.

`No Javadoc == No Credit`

Use the Java Coding Standard

Always.

See handout.

Handout also in **`docs`** folder.

`Exercise in class`

Lab

*Please do **not bring food** into lab.*

Drinks are OK, but please clean up.

Class Homepage and Repository

Schedule and Info

`https://skeoop.github.io/`

e-Textbook

[BIGJ] Horstmann, *Big Java. 5E or newer.*

Other Good Books:

Programming with Java by David Eck - free online

Modern Java in Action, 2E (2019)

Head First Java, easy to read, memorable, but long

Core Java for the Impatient

Why Put in Effort?

We are what we do.

Excellence, therefore, is a habit.

-- Aristotle

Push yourself in every course ...

- *develop a habit of excellence in everything*
- *prepare for your career*
- *get "A" (maybe)*
- *enjoy your time at KU more*

Why Practice?

I hear and I forget,

I see and I remember,

I do and I understand.

-- Confucius