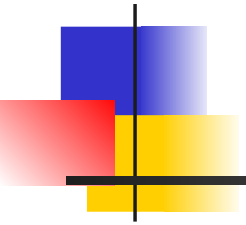

Introduction to Programming 2

Object-Oriented Programming & Modeling with lab
at Kasetsart University

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

these 3 are related to each other...

Java	Object Orientation	Modeling
How to use Java API Graphical Programs Collections Interfaces & Lambdas Generics Java 8 features Frameworks ...*and more!*	Encapsulation, polymorphism, & inheritance -- how to use them. OO approach to design OO Principles Design Patterns	Abstraction Modularity Modeling with UML Modeling of real-world situations using objects

BONUS topics

- How to test programs using **JUnit**
- Software development **Best Practices**:
  - design before coding
  - unit testing
  - iterative development
- Some real **frameworks** for creating apps

General Goals

Gain understanding and practical skill in...

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

Approach

Labs to learn and practice concepts.

- Java programming
- Design using UML
- O-O principles
- Programming style and testing

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 work.

Your grade is based on:

- Midterm and Final written exams
- Programming exams ("lab exam")
- Programming assignments
- Class participation
- Quiz scores
- Laboratory work and participation

At least 50% on <u>both</u> written exam <u>and</u> 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 unacceptably poor understanding or ability to apply

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.
- Java API docs: install locally and *bookmark* in your browser. Don't rely on Internet!
- IDE your choice: Eclipse, Netbeans, IntelliJ, BlueJ
- Git client
  - IDEs have built-in git tool, but you should also have the command line "git".

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/`

Weekly materials including labs and homework

`https://github.org/skeoop/oop/src`

or, check them out using Git. Please you:

```
cmd> git clone --depth 1 repo_url
```

to avoid copying lots of old commits (waste of space).

e-Textbook

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

Recommended:

[JTUT] Oracle, *Java Tutorial*.

Why Put in Effort?

We are what we do.

Excellence, therefore, is a habit.

-- Aristotle

Push yourself in every course ...

- *prepare for your career*
- *develop a habit of excellence in everything*
- *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.

-- Confucious