

# i219 Software Design Methodology

## 0. On this course

### What you will learn

- Object-oriented (OO) design & programming through examples. Among them are
  - A simple calculator
  - An assignment calculator whose source code is a sequence of assignments
  - An interpreter, a compiler (code generator) & a virtual machine for a mini-programming language
- Unified Modeling Language (UML) used for OO design
- Java used for OO programming
- Java Path Finder (JPF) used for analyzing Java programs, especially multithreaded programs in Java

## What you will be able to do

- You will be able to describe OO designs in UML.
- You will be able to write OO programs in Java.
- You will be able to analyze multithreaded programs in Java with JPF.

## Syllabus

1. Overview of software design methodology
2. Basic concepts on object-oriented technology
3. Static modeling
4. Object-oriented programming language 1
5. Object-oriented programming language 2
6. Object-oriented programming language 3
7. Information hiding and reuse
8. Dynamic modeling 1
9. Dynamic modeling 2
10. Multithreaded programming
11. Software model checking
12. Case study 1
13. Case study 2
14. Case study 3

## Evaluation

- One written test & several assignments
- In the written test (examination), you are allowed to bring any paper materials, such as printed lecture notes.
- I strongly recommend you to discuss the contents of the course with each other, but strongly prohibit you from plagiarizing solutions from others and your solutions from being plagiarized by others.
- Score
  - Test: 40
  - Assignments: 60
  - Total: 100

## In each file submitted

- Files submitted are .java, .jpf, .uxf, and .pdf ones.
- In each file submitted, you are supposed to write your name, your student identification number, and the time & date when the file was made or completed. Otherwise, your scores of assignments will be decreased.
- In .java and .jpf files, you are supposed to write them as comments.
- In .uxf files, you are supposed to write them in a note.
- In .pdf files, you are supposed to write them as usual.

## Website

- <http://www.jaist.ac.jp/~ogata/lecture/i219>
- Lecture notes, diagrams and programs used are available.
- Important announcements, such as assignments will appear on the webpage. Therefore, you may often want to visit the webpage.
- [You are supposed to learn lecture notes, etc. in advance, actively participate in each class, and learn them again after the class.](#)

## Software tools used in the course

1. Java: Version 1.8.0\_111 is used.
2. Text Editor: Any text editor is OK, but Emacs is recommended. Please do not use any sophisticated software development platforms, such as Eclipse and NetBeans.
3. UMLet (to draw UML diagrams): Version 14.1.1 is used.
4. Java Path Finder (JPF): v8.0 (rev 31) is used .
5. Shell (or command prompt): Any shell is OK. If you use Emacs, you can launch and use a shell on Emacs.

## Questions

- You can ask me any questions about contents of the course anytime at class.
- You can send me any questions about contents of the course anytime in this term by email.