CMSC 132:
Object-Oriented Programming II

Course Introduction

Department of Computer Science

University of Maryland, College Park

Course Catalog Description

- Introduction to use of computers to solve problems using software engineering principles
- Design, build, test, and debug medium-size software systems. Learn to use relevant tools
- Use object-oriented methods to create effective and efficient problem solutions
- Use and implement application programming interfaces (APIs)
- Programming done in Java

Things You Will Learn

- **Object-oriented software development**
  - **Modern software development techniques**
  - **Object-oriented design**
- **Algorithms & data structures**
  - **Lists, trees, graphs**
- **Programming skills**
  - **Java API, IDE, testing, debugging**

Course Is Not Just About Java

- **May seem to focus on Java**
  - **All programming in Java**
  - **Many interesting Java language features**
- **Lessons intended to be general**
  - **Principles should apply to all languages**
    - **Ways of thinking about design**
    - **General ideas about software**
  - **Can translate skills to other languages**

Course is not just about programming

- Software development involves a lot more than programming and debugging
- Developing software that doesn't satisfy your customer, or find a customer, is pointless
- Poor (or no) design will make it hard to modify or reuse your software
  - and you will have to modify it
- Lack of testing, plans, and build process leaves you lost, with no idea how to get back on track

- We have to cover a lot of programming ground, but we will also touch on these issues

Assume You Already Know

- Coding
  - Variables, operators, loops, arrays
- Basic object-oriented programming
  - Classes, methods, inheritance
- Java
  - Class libraries, exceptions
- Tools
  - Eclipse IDE, debugger

Where does 132 fit in?

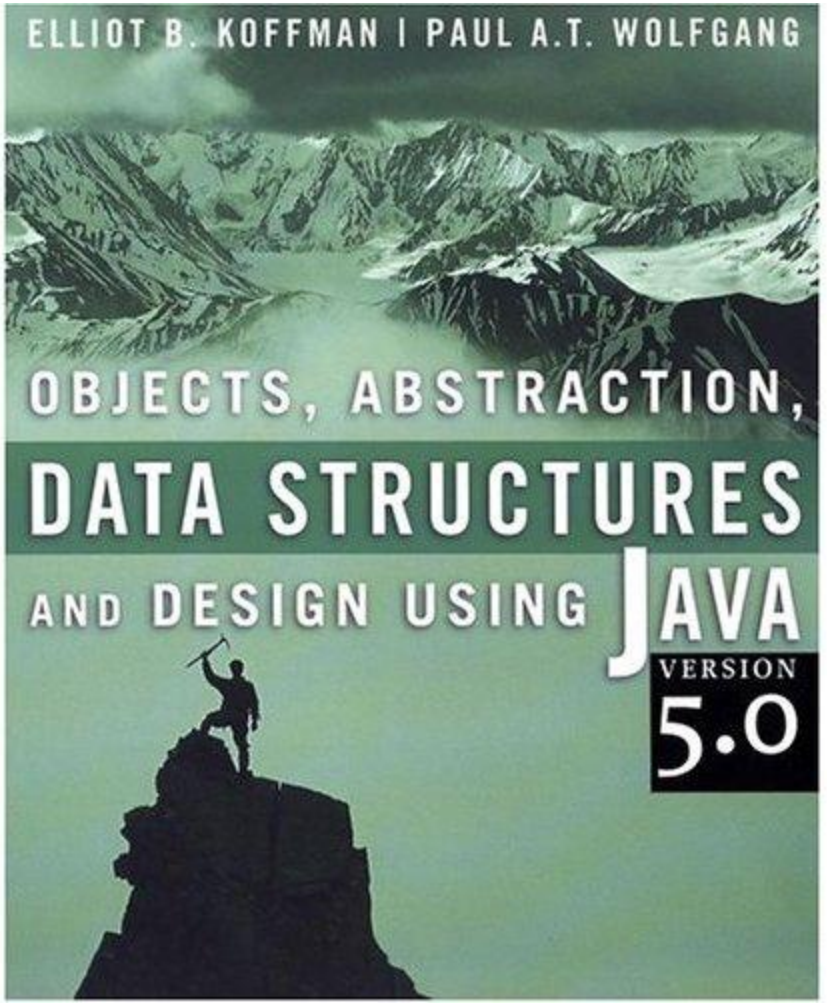
- CMSC 131
  - Basic programming skills
- CMSC 132
  - Software design & basic algorithms
- CMSC 212
  - Low-level programming
- CMSC 250
  - Discrete math & logic
- CMSC 351
  - Analysis of algorithms

Organization

- Personnel
  - Instructor
    - Nelson Padua-Perez
  - Teaching assistants
    - Phil Huynh, Roman Stanchak
- Classes
  - Lectures
  - Labs
  - Office hours

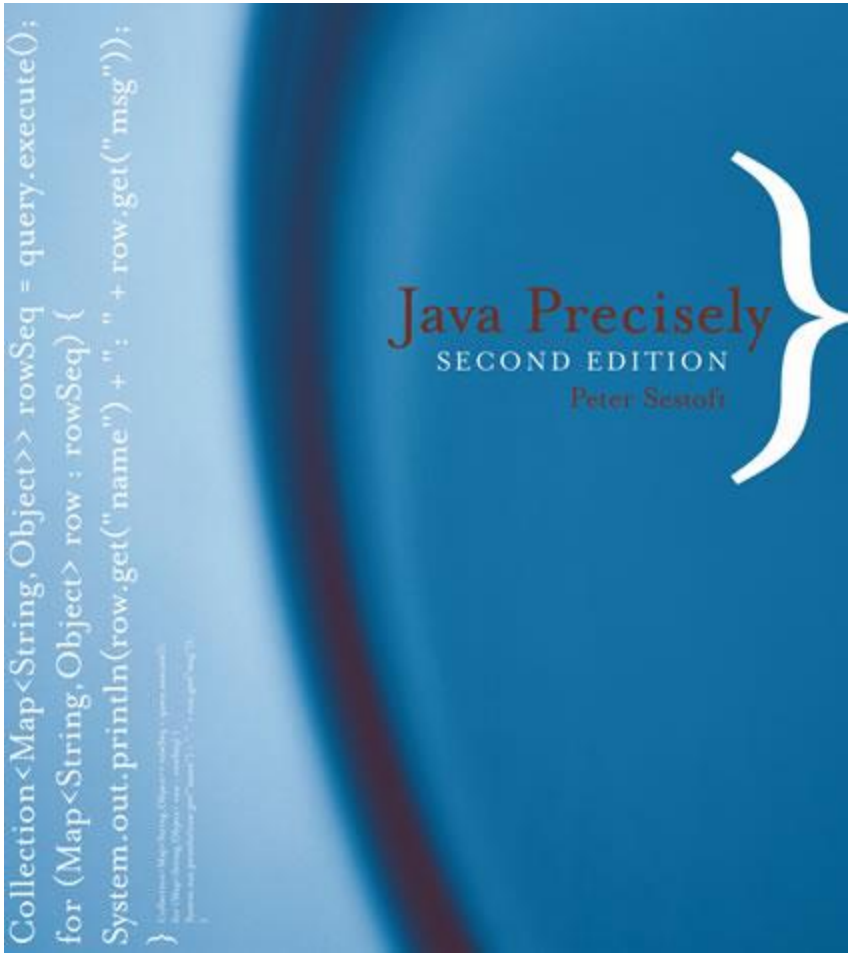
Textbook

- **Recommended**
  - **“Objects, Abstractions, Data Structures and Design Using Java (version 5.0)”**
  - **By Elliot Koffman and Paul Wolfgang**



Textbook (cont.)

- **Recommended**
  - **“Java Precisely (2nd Edition)”**
  - **By Peter Sestoft**



Projects

- 5 projects
  - Evaluate design, coding, testing skills
  - Tries to involve interesting application areas
    - Networking, user interfaces, data compression
- Late policy
  - Projects due at 6 pm
  - 20% penalty, up to 9am the next morning
  - Plan to complete all projects on time
- Good faith attempt
  - Must attempt all projects to pass

Projects (cont.)

- Environment
  - Eclipse IDE
  - Do not use your cmsc131 workspace (Create a new one).
  - Your cmsc131 linuxlab account is no longer valid.
- Automated submission & testing
  - Submit server
    - https://submit.cs.umd.edu
  - Maintains record of submissions
    - CVS repository
    - May use for research
  - Release testing
    - Can evaluate project using real test cases

Grading

- **Based on**
  - **Projects, homework exercises, quizzes, midterms, final**
- **Point distribution (roughly)**
  - **34% Projects**
  - **14% Homework Exercises**
  - **12% Quizzes**
  - **10% Midterm #1**
  - **10% Midterm #2**
  - **20% Final Exam**
- **Available on-line**
  - **https://grades.cs.umd.edu**

Course Bulletin Board

- **Bulletin Board (Forum)**
  - **https://forum.cs.umd.edu/forumdisplay.php?f=95**
- **Policy on project postings**
  - **Can ask about specification, setup, tools, etc.**
  - **Do not ask about design, implementation, etc.**
  - **Violators may face penalty for academic dishonesty**

Facebook group

- **Search for CMSC 132**
- **No project questions, etc.**
- **Just for fun/social**

Academic Honesty

- All individual assignments & exams must be done individually (except "open" assignments)
- Do not copy (or allow others to copy) your work in any way
- Submissions will be compared to submissions from current and previous semesters
- Cases of academic dishonesty will be referred to the University's Office of Judicial Programs
- Visit Student Honor Council website for more detailed explanation of academic dishonesty

Excused Absences

- Students must apply in writing and furnish documentary support for excused absences
- Support should explicitly indicate the dates or times the student was incapacitated
- Excused absence does not typically translate into project extensions
- Students requesting reasonable academic accommodations due to a disability must provide a letter from the Office of Disability Support Services

Course Advice

- Start projects early
  - make use of release testing if offered
- Ask questions
- Read book
- Attend lectures
- Attend labs
- Attend office hours

Topics Preview

- **Algorithms & data structures**
  - **Asymptotic efficiency**
  - **Lists, stacks, queues**
  - **Trees, heaps**
  - **Sets, maps, graphs**
  - **Recursion**

Topics Preview

- **Object-oriented software development**
  - **Software life cycle**
  - **Requirements & specifications**
  - **Designing objects & classes**
  - **Testing & code coverage**
  - **Programming paradigms**
  - **Design patterns**

Topics Preview

- **Programming skills**
  - **Java collection framework**
  - **Exceptions**
  - **Threads, synchronization**
  - **Java APIs**
    - **Graphics User Interfaces (GUI)**