Data Structures and Algorithms

Lecture 1: Course Introduction

Department of Computer Science & Technology
United International College

Course Information – Section 1

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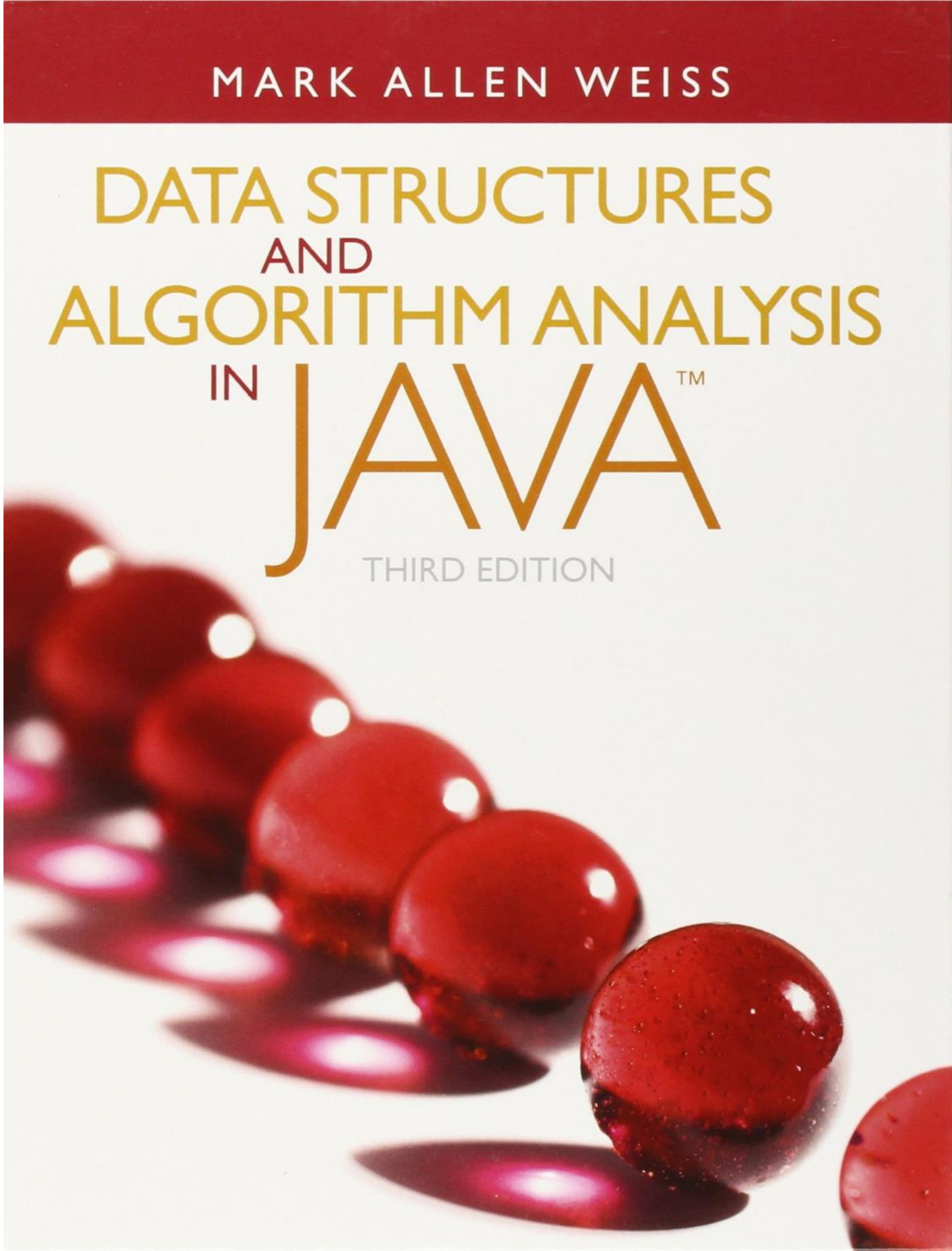
Textbook

- Any version is fine



Grading

- Assignments
  - Written assignments (15%)
  - Coding assignments (35%)
- In-class Exercises (10%)
- Final Examination (40%)

Late Submissions

- No late submission is accepted.
  - Sufficient time will be given for every assignment.
  - Failing to submit your works on time will result in a score of zero.
  - Mind the deadlines!

Plagiarism Policy

- Copies in assignments: both get 0
  - Regardless of who copied who
  - Be protective of your works!
- Cheating in exams: an automatic FAIL

You are not allowed to copy or slightly change others' solutions or codes. You are not allowed to copy from the Internet either. All the works you submit must be your own.

Course Overview

- A fundamental computer science course
  - Essential for programming
  - Essential for advanced courses
- A challenging course, which needs
  - Mathematical and logical thinking
  - Programming

Course Prerequisite

- Programming
  - Need to know Java
  - Eclipse or other PC programming environment
  - Good programming skills
  - Translate pseudo-codes into codes
- Basic mathematical skills
  - Solving recursive equations, manipulation of symbols, etc.
- Computer architecture
  - Storage, memory access, etc.

Topics Covered in this Course

- Algorithm Analysis
  - Mathematical Background, Big-O, Running time Calculation
- Abstract Data Types
  - Lists, Stacks, and Queues
- Sorting
  - Insertion Sort, Merge Sort, Quick Sort
  - Heaps and Heap Sort
- Trees
  - Tree Traversals, Binary Trees and Binary Search Trees, AVL Trees, and B+ Trees
- Graph Algorithms
  - Breadth First Search

Overall Goal of the Course

- From programmer to architect
- Learn to solve problems
- Algorithms and programming go hand in hand
- Learn to analyze your solutions