

## Wrap-Up



EECS2011 X:  
Fundamentals of Data Structures  
Winter 2023

CHEN-WEI WANG

## What You Learned (2)



- **Data Structures**
  - Arrays
  - (Circular Arrays, Dynamic Arrays, Amortized RT Analysis)
  - Singly-Linked Lists and Doubly-Linked Lists
  - Stacks, Queues
  - Trees, Binary Trees, Binary Search Trees, Balanced BSTs
  - Priority Queues and Heaps
- **Algorithms**
  - Asymptotic Analysis
  - Binary Search
  - Insertion Sort, Selection Sort, Merge Sort, Quick Sort, Heap Sort
  - Pre-order, in-order, and post-order traversals

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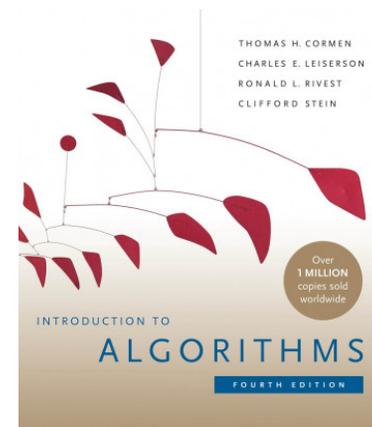
## What You Learned (1)



- **Java Programming**
  - JUnit
  - Recursion
  - Generics

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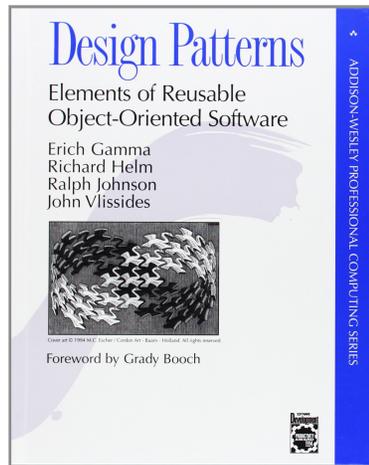
## Beyond this course... (1)



- *Introduction to Algorithms (4th Ed.)* by Cormen, etc.
- DS by DS, Algo. by Algo.:
  - **Understand** math analysis
  - **Read** pseudo code
  - **Implement** in Java
  - **Test** in JUnit

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## Beyond this course... (2)



- *Design Patterns: Elements of Reusable Object-Oriented Software* by Gamma, etc.
- Pattern by Pattern:
  - **Understand** the problem
  - **Read** the solution (not in Java)
  - **Implement** in Java
  - **Test** in JUnit

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## Wish You All the Best



- What you have learned will be **assumed** in the third year.
- Some topics we did not cover:
  - Hash table [See Weeks 10 – 11 of EECS2030-F19]
  - Graphs [EECS3101]
- Logic is your friend: Learn/Review EECS1019/EECS1090.
- Do **not** abandon Java during the break!!
- Feel free to get in touch and let me know how you're doing :D

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## Beyond this course... (3)



A tutorial on building a language compiler using Java (from [EECS4302-F22](#)):

[Using the ANTLR4 Parser Generator to Develop a Compiler](#)

- Trees
- Recursion
- Visitor Design Pattern

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